

For Reference

NOT TO BE TAKEN FROM THIS ROOM

For Reference

NOT TO BE TAKEN FROM THIS ROOM

Ex LIBRIS UNIVERSITATIS ALBERTAENSIS





Digitized by the Internet Archive
in 2019 with funding from
University of Alberta Libraries

<https://archive.org/details/dispositionofcro00john>

Thesis
1963
11

UNIVERSITY OF ALBERTA

THE DISPOSITION OF CROWN PETROLEUM AND
NATURAL GAS RIGHTS IN ALBERTA

by

JOHN E. H. CONDER

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF ARTS

DEPARTMENT OF POLITICAL ECONOMY

EDMONTON, ALBERTA

APRIL, 1963

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read,
and recommend to the Faculty of Graduate Studies for
acceptance, a thesis entitled The Disposition of Crown
Petroleum and Natural Gas Rights in Alberta, submitted
by John E.H. Conder in partial fulfilment of the require-
ments for the degree of Master of Arts.

Date

April 17, A.D., 1963

ABSTRACT

The Province of Alberta presently owns more than eighty per cent of the minerals underlying its territory. The federal Department of the Interior administered these rights until 1930, when control over them was transferred to the Province and the resources came under the Department of Lands and Mines. In 1949, following significant discoveries of petroleum, the Department of Mines and Minerals was established to administer the mineral interests of the Province.

A comprehensive policy governing the disposition of Crown petroleum and natural gas rights has been developed over the past sixty-five years. At first such rights were sold outright, but since 1910 a leasehold system has been in force. The various forms of disposition became more numerous as the requirements of the industry became more diverse.

Two periods of major change are evident from a study of the evolution of the policy. In the late 1940's and early 1950's the establishment of Crown reserves became general throughout the Province and new forms of tenure were added, and in 1962 the Mines and Minerals Act and the regulations made thereunder were extensively revised.

Income to the Province from the disposition of its petroleum and natural gas rights has been important in the post-Leduc period.

Revenue from this source has accounted for at least one-third of total revenue in each year since 1949, and this proportion was as high as one-half for two years in the mid 1950's.

The system of disposition of Crown rights has had a number of implications for the development of the petroleum and natural gas industry. "Independent" companies have been encouraged, actual petroleum production has lagged behind possible output from existing wells, and exploration for new pools has been somewhat inhibited in favour of development drilling in marginal areas.

ACKNOWLEDGEMENTS

The supervision of this thesis by Professor G.K. Goundrey, of the Department of Political Economy of the University of Alberta, is most gratefully acknowledged. His suggestions and assistance contributed greatly to the final product. I also am indebted to Dr. E.J. Hanson, Head of the Department, for his guidance in the early stages of the thesis.

A number of people in the petroleum industry and with the Government of Alberta have taken an interest in the work and have been of assistance to me. In particular, Mr. H.S. Conder, my father, has been most helpful in making a considerable amount of material available.

A substantial award from the Francis J. Reeve Foundation in the 1961-62 academic year made it possible for me to devote a significantly higher proportion of my time to the thesis over that period.

The library of the Bank of Canada has facilitated my work by making readily available numerous articles and federal publications.

Miss P. McCann, of Ottawa, typed both the drafts and the final copy of the thesis. Her assistance was greatly appreciated.

TABLE OF CONTENTS

Chapter	Page
I. CROWN MINERALS IN ALBERTA	1
II. REVIEW OF ADMINISTRATION OF CROWN PETROLEUM AND NATURAL GAS RIGHTS	15
The Department of the Interior The Department of Lands and Mines The Department of Mines and Minerals	
III. THE MINES AND MINERALS ACT, 1962	34
IV. REVENUES TO THE PROVINCE OF ALBERTA FROM DISPOSITION OF CROWN MINERAL RIGHTS	55
Petroleum and Natural Gas Industry Expenditure on Land Acquisition and Rentals, and on Royalties Proportion of Total Industry Expenditure on Land Acquisition and Rentals, and on Royalties, Received by the Province Crown reserves, Rentals, and Royalties Components of Crown Reserves Crown acreage Held by the Petroleum and Natural Gas Industry	
V. THE EFFECT OF ALBERTA'S PETROLEUM AND NATURAL GAS LAND POLICY ON THE DEVELOPMENT OF THE INDUSTRY	72
VI. CONCLUSION	82
BIBLIOGRAPHY	89
APPENDIX I	94
APPENDIX II	104

LIST OF TABLES

Table		Page
1.	Dominion Lands Granted to Railways as Land Subsidies in Alberta, and Mileage Actually Constructed in Alberta	12
2.	Mineral Status in the Province of Alberta at the Time of the Transfer of Resources	13
3.	Royalty Payable on Crude Oil Production; 1951-62	31
4.	Present Royalty on Crude Oil	32
5.	Increase in Proven Reserves of Crude Petroleum in Canada, 1951-61	35
6.	The Significance of Industry Expenditure on Land Acquisition, Rentals and Royalties	58
APPENDIX I		94

CHAPTER I

CROWN MINERALS IN ALBERTA

It is the purpose of this chapter to explain the present distribution of Crown-owned mineral rights in the Province of Alberta. Gold and silver were the only minerals reserved from land patents granted by the Crown prior to October 1887. Therefore, the terms of the Hudson's Bay Company surrender of Ruperts's Land in 1870 and the Dominion Lands policy followed by the Federal Government after that date both had a bearing on the present situation. It is proposed to treat each of these in turn.

Charles II of England in 1670 granted to the founders of the Hudson's Bay Company full title to all of the lands draining into the Hudson Bay, in return for carrying out the exploration and development of that region. This area, which was known as Rupert's Land, was held for two hundred years by the Company. However, since its main object was fur trading, and since large-scale colonization presumably would have been both impractical and to the detriment of the trade, settlement was generally not encouraged-- the one notable exception being the Selkirk Colony.¹

¹ V.A. Wood, "Alberta's Public Land Policy, Past and Present," Journal of Farm Economics, XXXIII, No. 4 (November, 1951), 736.

The transfer of the Hudson's Bay lands to Canada involved two distinct steps. Firstly, the Company surrendered its rights in Rupert's Land to the United Kingdom; secondly, these lands were combined with the "North-Western Territory", and both areas were granted to Canada by Imperial Order in Council on June 3, 1870.² This process followed the form laid down by the Rupert's Land Act, 1868.³ A number of stipulations regarding the terms of surrender were made in that Act; section four provided that "...nothing herein contained shall prevent the said Governor and Company from continuing to carry on in Rupert's Land or elsewhere Trade and Commerce" and section five "...provided further, that no Charge shall be imposed by such Terms upon the Consolidated Fund of the United Kingdom".

The Deed of Surrender of November 19, 1869⁴ laid down the precise terms of the transfer. The Dominion agreed to pay the Company £300,000 and to allow it to retain its lands at trading posts, the total area of which is listed as 45,160 acres, excluding Fort Garry. Further, article five states that "The Company may, at any time within fifty years after such acceptance of the said surrender, claim

²Statutes of Canada, 35 Vict. (1872), pp. lxiii - lxxxiii.

³Statutes of Canada, 31-32 Vict. (1869), pp. iii ff.

⁴Charters Statutes, Orders in Council & c. Relating to the Hudson's Bay Company (London: Hudson's Bay Company, 1931), pp. 193-204.

in any township or district within the fertile belt in which land is set out for settlements, grants of land not exceeding one-twentieth part of the land so set out...". The following article defines this belt as being bounded "... on the south by the United States' boundary; on the west by the Rocky Mountains; on the north by the Northern Branch of the Saskatchewan River; on the east by Lake Winnipeg, the Lake of the Woods and the waters connecting them".

The system of selection of this grant was described in the Dominion Lands Act of 1872.⁵ Within the stated area, the Company was to receive sections eight and twenty-six in every fifth township, and section eight and the southern half and north-west quarter of section twenty-six in all other townships.⁶ Under this system, it is estimated that the Hudson's Bay Company would have obtained a total of 7,031,257 acres, of which 2,404,152 acres would have been in Alberta.⁷ However, the Dominion, while permitting alternative selections to be made in cases of fractional sections, prior settlement, and lands denuded under timber leases, would not allow the Company

⁵Statutes of Canada, 35 Vict., c. 23 (1872), ss. 17-21.

⁶As there are thirty-six sections in each township, this system granted to the Company thirty-six quarter sections out of each 720 throughout the belt.

⁷Chester Martin, "Dominion Lands" Policy, in Vol. II of Canadian Frontiers of Settlement, ed. W.A. Mackintosh and W.L.G. Joerg (Toronto: Macmillan Co., 1938), p.242.

any lands in forest reserves, national parks, or Indian reserves. A compromise was reached in 1924, whereby the Company agreed to surrender its claims in the Rocky Mountain Forest Reserve, in Rocky Mountain and Waterton Lakes National Parks, and in Indian reserves, and to forfeit its lands in other parks and forest reserves in exchange for equivalent selection rights elsewhere. This settlement gave the Company an estimated 6,639,059 acres in the fertile belt;⁸ the total of Hudson's Bay grants in Alberta is estimated at 2,404,000 acres.⁹

The policy followed by the federal Department of the Interior with respect to the Dominion Lands reflected two major purposes; encouragement of railways and of settlement. Although it may be held that the granting of responsible government presumes that the governing body shall have control of the public domain within its jurisdiction,¹⁰ such was not the case with the prairie provinces. For a variety of reasons, which need not concern us here, the Crown lands in Alberta were administered by the Federal Government until 1930, twenty-five years after the creation of the Province.

⁸Ibid., p.241.

⁹Province of Alberta, Report of the Department of Lands and Mines, 1938-39 (Edmonton: 1939), p.11.

¹⁰Chester Martin, The Natural Resources Question (Winnipeg: King's Printer to the Province of Manitoba, 1920), p.26.

The Government's land policy was formulated in the Dominion Lands Act of 1872.¹¹ Section thirty-three of this Act dealt with homesteading, and stipulated that "Any person who is the head of a family, or has attained the age of twenty-one years, shall be entitled to be entered for one quarter section or a less quantity of unappropriated Dominion lands, for the purpose of securing a homestead right in respect thereof". Further, a wood lot of between ten and twenty acres could be obtained to provide lumber and fuel to the farm. A patent for the land could be issued to the homesteader "...upon proof, to the satisfaction of the Local Agent that he, ...has resided upon or cultivated the land for the three years next after the filing of the affidavit for entry ...provided such claimant is then a subject of Her Majesty by birth or naturalization".¹² In effect, residence had to be maintained on the land for six months in every year, and a specified acreage--usually between fifteen and twenty-five acres--had to be broken and cultivated. After 1874, a pre-emption system was introduced making it possible for the holder of either a homestead entry or of title to a quarter-section to apply for a further 160 acres in the vicinity of his holding, and to obtain title to such land by complying with further residence and cultivation conditions either on

¹¹ Statutes of Canada, 35 Vict., c.23 (1872).

¹² Ibid., s.33, cl. 11.

the original homestead or on the pre-empted land and by paying a small purchase price, which was generally three dollars per acre.¹³

Section twenty-two of the Act provided that "... sections eleven and twenty-nine in each and every surveyed township throughout the extent of the Dominion lands, shall be and are hereby set apart as an endowment for purposes of education", except that in cases of prior settlement alternative selection would be made by the Secretary of State. However, the form of administration of these "school lands" was not laid down until the Dominion Lands Act 1879¹⁴ was enacted, providing "... that all sales of school lands shall be at public auction, and that in no case shall such lands be put up at an upset price less than the fair value of corresponding unoccupied lands in the township in which such lands may be situated".¹⁵ The principal from these sales was to "... be invested in Dominion securities, and the interest arising therefrom, after deducting the cost of management, shall be paid annually to the Government of the Province or Territory within which such lands are situated towards the support of public schools therein..."¹⁶ However, the first of these land sales was not made

¹³Wood, Journal of Farm Economics, XXXIII, No. 4, 738-39.

¹⁴Statutes of Canada, 42 Vict. c. 31 (1879).

¹⁵Ibid., s. 23, cl. 1.

¹⁶Ibid., cl. 3.

until 1883.¹⁷

It will be remembered that initially all Crown land grants and sales carried title to all underlying minerals except the "Royal metals". However, in 1887 it was ordered that

...a clause be inserted in all patents from the Crown for lands in the North-West Territories, situated West of the Third Meridian, reserving to Her Majesty, Her Successors and Assigns forever, all mines and minerals which may be found to exist within, upon, or under such lands...except in the case of patents for lands which have already been sold or disposed of for valuable consideration.¹⁸

The Third Meridian coincides with 106° longitude, and the present eastern boundary of Alberta is the Fourth Meridian, or 110° longitude; thus this above ruling applied to all lands now situated within the Province. However, as time went on there was some dispute as to the validity of the Order, as it had never been published in the Canada Gazette. To clarify this point, an Act Respecting Dominion Lands of 1894 stated in part that "...the omission to publish such order or regulation in any prescribed manner, shall not be held to invalidate it or anything done thereunder."¹⁹

¹⁷ Martin, "Dominion Lands" Policy, p. 339.

¹⁸ Orders in Council of the Department of the Interior, No. 9 (1887) (Ottawa: Public lands Section, Resources Division, Department of Northern Affairs and National Resources), P. C. No. 1070; October 31, 1887. P. C. No. 2167 of September 17, 1889 extended this ruling to all patents from the Crown in Manitoba and the Northwest Territories.

¹⁹ Statutes of Canada, 57-58 Vict., c.26 (1894), s.2.

It is most difficult to estimate the extent of alienation of Crown minerals to individuals over the period 1872 to 1887. No administrative area coinciding with the Province of Alberta then existed, and therefore it would be necessary to search each patent granted during these years in order to ascertain the acreage involved. However, the Alberta Government has estimated that somewhat more than half a million acres were so alienated from the public domain.²⁰

There was one important exception to the Order of 1887, however. The Judicial Committee of the Privy Council held it to be inapplicable to lands granted as a subsidy or bounty, that is, to railway land grants.²¹ Therefore, all lands awarded to the various railways as a subsidy for building their respective lines included title to minerals.

The Act Respecting the Canadian Pacific Railway,²² which transferred the building of the transcontinental line to a private syndicate, granted "...to the Company a subsidy of twenty-five million dollars in money, and twenty-five million acres of land..."²³ over and above the

²⁰Department of Mines and Minerals of the Province of Alberta, Submission to Royal Commission on Energy (Edmonton: mimeographed, 1958), p. 9.

²¹See Martin, "Dominion Lands" Policy, pp. 289-90 for a discussion of this matter.

²²Statutes of Canada, 44 Vict. c. 1 (1881).

²³Ibid., s. 3.

right of way and station sites. Thus the precedent of utilizing Dominion lands to encourage railway construction was established. The contract between the Crown and the Canadian Pacific, which is attached to the above Act, and which set the pattern of subsequent railway land grants, defines the method of selection of the land grant and enunciates the principle of indemnity selection, which also was to have far reaching consequences, as follows:

11. The grant of land hereby agreed to be made to the Company, shall be so made in alternate sections of 640 acres each, extending back 24 miles deep, on each side of the railway, ...in so far as such lands shall be vested in the Government, --the Company receiving the sections bearing uneven numbers. But should any of such sections consist in a material degree of land not fairly fit for settlement, the Company shall not be obliged to receive them as part of such grant; and the deficiency thereby caused and any further deficiency which may arise... shall be made up from other portions in the tract known as the fertile belt...²⁴

The terms of the original C.P.R. contract were modified a number of times, as the route was changed from the Yellowhead Pass to the Kicking Horse Pass, and as financial difficulties overtook the Company, but the form remained the same. Indemnity selection of lands was widely practiced, both by the C.P.R. and by the later land-subsidized railroads, all of whom received the same privilege. This "...precipitated the unseemly scramble for desirable reserves which resulted in railway land grants 'fairly fit for settlement' in almost every eligible area of Western Canada."²⁵ Further special provisions

²⁴Ibid., Schedule, s.II.

²⁵Martin, "Dominion Lands" Policy, p. 304.

were allowed to suit the requirements of the Canadian Pacific's irrigation schemes in south-eastern Alberta, where even the Hudson's Bay Company lands were exchanged to provide the necessary uniform control of large tracts of land.

It was apparent that Ontario was to have contributed nine million acres to the Canadian Pacific subsidy, and a twenty mile belt on each side of the track in British Columbia was, under the terms of the Province's entry to Canada, held in trust by the Dominion for use as a land subsidy²⁶ from which selection could have been made by the C.P.R. However, except for approximately 1,300 acres chosen in British Columbia, neither of these Provinces contributed to the main line grant, which thus came to average over 24,000 acres per mile across the prairies, or every odd-numbered section in a seventy-five mile belt.²⁷

Although the last statutory land grant to a railroad was made in 1894,²⁸ bringing to a close thirteen years of this policy, the railway construction by which these lands were earned continued for many years, and the actual selection of such lands did not end until all the unclaimed odd-numbered sections were opened to homestead settle-

²⁶Statutes of Canada, 35 Vict. (1872) "Order in Council Respecting the Province of British Columbia", May 16, 1871, p. lxxxviii.

²⁷Martin, "Dominion Lands" Policy, pp. 269-70.

²⁸Ibid., p. 329.

ment in 1908.²⁹ "It should be pointed out that practically the whole burden of providing land for these railway subsidies, not only for the railways within the Prairie Provinces, as set up in 1905, but for the railways to the north, as well as for portions of the Canadian Pacific lying in Western Ontario and in British Columbia, fell to the lot of the three Prairie Provinces".³⁰ In total, over fifty-five million acres of prairie land in the four western provinces was pledged to railway grants;³¹ however, only 31,672,006 acres were actually earned by construction and transferred to the respective companies.³² The following table shows the mileage constructed and acreage thereby patented in the Province of Alberta by the various land-subsidized railway companies.

One category of alienation of Crown mineral rights remains to be mentioned. Beginning in 1898, the Department of the Interior evolved a petroleum and natural gas policy for Dominion lands, in response to requests for permission to develop these resources. Until 1910, petroleum and natural gas rights were sold to prospectors

²⁹Ibid., p. 496.

³⁰Government of Canada, Report of the Royal Commission on the Natural Resources of Alberta (Ottawa: 1935) p. 10.

³¹Ibid.

³²Department of Mines and Minerals of the Province of Alberta, Historical Review of Mineral Ownership (Edmonton: mimeographed, 1960), p. 2.

TABLE 1. -- Dominion lands granted to railways as land subsidies in Alberta, and mileage actually constructed in Alberta

	<u>Alberta mileage</u>	<u>Alberta acre- age patented</u>
Calgary and Edmonton Railway Company	295.07	1,806,168
Alberta Railway and Coal Company	174.12	1,096,217
Souris Branch, Canadian Pacific Railway Company	Nil	160
Pipestone Extension, Souris Branch, Canadian Pacific Railway Company	Nil	521
Great North West Central Railway Company	Nil	640
Manitoba Southwestern Colon- ization Railway Company	Nil	319,680
Canadian Northern Railway Company	Nil	859
Manitoba and Southeastern Railway Company	Nil	312
Canadian Pacific Railway Company	<u>332.10</u>	<u>9,807,174</u>
Total	801.29	13,031,731

Source: Province of Alberta, Report of the Department of
Lands and Mines, 1938-39 (Edmonton: 1939) p.11.

upon fulfillment of certain conditions. It is estimated that 16,028 acres of these rights were lost to the Province in this way.³³

³³Submission to Royal Commission on Energy, p.4.

In 1930 the Dominion transferred control of all Crown lands in Alberta except those in Indian reserves and national parks to the Province.³⁴ The following table shows the acreage acquired by Alberta in the transfer.

TABLE 2. -- Mineral status in the Province of Alberta
at the time of the transfer of resources

	<u>Acreage</u>
Retained by Canada	
In national parks	13,434,240
In Indian reserves	1,328,090
Granted by Canada to	
Railways	13,031,731
Hudson's Bay Company	2,404,000
Others including homesteaders, prospectors, etc. (estimated)	564,269
Acquired by Alberta in the transfer	<u>132,620,070</u>
Total Acreage of Alberta	<u>163,382,400</u>

Source: Department of Mines and Minerals of the Province of Alberta, Submission to Royal Commission on Energy (Edmonton: mimeographed, 1958) p.9.

Since 1930, Alberta has pursued a policy of reserving all minerals from land patents, and of leasing mineral rights to private concerns interested in developing them. Therefore, the Province now holds approximately eighty-one per cent of all mineral rights underlying

³⁴ Statutes of Canada, 20-21 Geo. V, c.3 (1930), "The Alberta Natural Resources Act."

its surface. It is this factor which makes a knowledge of public policy governing the disposition of Crown minerals of some importance in any assessment of the development of resource industries in Alberta. In view of the importance of the petroleum and natural gas industry both to provincial revenues and to the structure of primary industry in Alberta, this study will be confined to the development of the present forms of disposition of Crown petroleum and natural gas rights.

CHAPTER II

REVIEW OF ADMINISTRATION OF CROWN

PETROLEUM AND NATURAL GAS RIGHTS

1898-1962

Department of the Interior

The federal Department of the Interior inaugurated its petroleum land policy in 1898, with an Order in Council¹ permitting prospecting for oil on Dominion lands south of the Canadian Pacific Railway line in the district of Alberta.² One section of land could be reserved for six months on application, and, if petroleum were discovered in commercial quantity, the Minister was authorized to sell the section to the applicant at one dollar per acre. A Crown royalty of two and one-half per cent was to be levied on sales of petroleum from such properties.

¹Orders in Council of the Department of the Interior, No. 20 (1898) (Ottawa: Public Lands Section, Resources Division, Department of Northern Affairs and National Resources). P.C. No. 1822; August 6, 1898.

²In 1901 regulations were introduced to encompass all unappropriated Dominion lands, and in 1905 provision was made for prospecting for Crown petroleum on lands the surface of which had been disposed of, provided that a lease in approved form was first obtained from the owner of the surface.

These regulations were amended on a number of occasions between 1898 and 1910,³ but the sale of Crown rights continued to be permitted: In 1910, however, this practice was discontinued in favour of a leasehold policy for Crown petroleum and natural gas rights⁴ which forms the beginning of the present system of disposing of such rights. The maximum area of each lease was set at three sections, and the term was twenty-one years renewable for a further twenty-one years. Rental was originally twenty-five cents per acre for the first year and fifty cents an acre for each of the remaining years, but was later doubled for both periods. Expenditures incurred during the second and third years, exclusive of equipment and casing costs, could be credited towards the rental for those years. No royalty was to be payable on production until 1930, but certain work was required and suitable equipment of a value of at least \$5,000 had to be installed within a year.⁵ Similar regulations were applied to school lands in 1913 except that the maximum area which could be held under lease was one section.

³See: Department of Mines and Minerals of the Province of Alberta, Submission to Royal Commission on Energy (Edmonton: mimeographed, 1958), pp. 2-4.

⁴The petroleum regulations were made applicable to natural gas in 1906.

⁵Chester Martin, "Dominion Lands" Policy, in Vol. II of Canadian Frontiers of Settlement, ed. W.A. Mackintosh and W.L.G. Joerg (Toronto: Macmillan Co., 1938), p.457.

A lessee could acquire only one lease by application⁶ until 1914, but in that year this restriction was removed, and a lessee was permitted to "group" his holdings on up to twenty sections for the purpose of applying towards rentals credits earned by expenditures, provided that each lease was separated by not more than two miles.⁷ In 1918, under the stimulus of the war, the privilege of defraying rentals from expenditures was extended to the fourth and fifth years of the lease. The prospector was to be encouraged by in effect being allowed to control at nominal cost at least the majority of the petroleum discovered in any one pool by virtue of his efforts.

Foreign interests registered or licensed in Canada were authorized to prospect for petroleum on Dominion lands for the first time in 1920.⁸ In the same year, following representations to the Department of the Interior that failure to state the royalty which might be charged on petroleum created uncertainty and retarded development, the royalty was fixed at not more than five per cent for the first five years after production of oil had, in the opinion of the Minister, been discovered in commercial quantity. For the following five years the

⁶There was no limit on the number of leases which could be held by assignment.

⁷Leases on school lands were excluded from this arrangement until 1928.

⁸Martin, p. 458.

royalty was to be between five and ten per cent of sales, and for subsequent years it would be ten per cent. However, the royalty regulations were designed to stop speculation rather than to raise revenue; no royalty was assessed until January 1930, in accordance with the leasing regulations.⁹

By 1921 oil prospecting in Western Canada was at a difficult stage. The boom of 1914 in Turner Valley did not last, and extensive over-investment had taken place.¹⁰ The Northwest Company, a subsidiary of Imperial Oil Company, claimed to have spent more than \$1,610,000 in exploration on the prairies, of which somewhat over \$250,000 had been applied on rentals. The Company, therefore, had approximately \$1,360,000 of "excess credits", or expenditures which had not earned exemption from rentals. Further amounts had been spent in the Territories, yet there had been no significant discovery of petroleum.¹¹ Faced with the possibility of abandoning operations in the area, the Company suggested that the industry be permitted to apply forty per cent of the total exploratory and development expenditure incurred up to the end of 1921 in the prairie provinces in settlement of

⁹Submission to Royal Commission on Energy, pp. 8-9.

¹⁰F. K. Beach and J. L. Irwin, The History of Alberta Oil (Edmonton: Alberta Publicity and Travel Bureau, 1940), pp. 19-20.

¹¹Martin, p. 458.

rentals due after July, 1921 on all Crown lands except school lands. This recommendation was substantially allowed, and forty per cent-- later fifty per cent-- of these "excess expenditures" over the amount of rentals were placed to the lessees' credit and applied on rentals. If oil were discovered in commercial quantity, however, no further rentals in that group of leases could be defrayed in this way.

Prospecting permits, which were the forerunners of the petroleum and natural gas reservations, were established in 1928. They were designed to encourage exploration of an area not exceeding three sections. The rental was ten cents per acre, the term was one year, and the permittee had the option to lease the entire area, while credit for the first year of the lease rentals could be obtained from exploratory expenditure. A cash bond of forty cents an acre had to be posted, but was refundable if satisfactory operations were conducted.¹²

The administration of the Department of the Interior over petroleum and natural gas in Alberta ended on October 1, 1930, when the Province assumed control of its resources. Turner Valley had enjoyed a second boom in 1924 with the completion of Royalite 4, but there was some doubt as to whether this well was an isolated find or heralded the discovery of a commercially exploitable field, and there was a lag before new drilling was financed. The following burst of

¹²Submission to Royal Commission on Energy, pp. 6-7.

activity soon subsided when other wells were less spectacular producers. Another stage in Turner Valley's history had been set in 1929, when Home 1, 2 and 3 all were prolific wells. These created a sustained interest in the field which continued into the 1930's. However, it was not until 1936, when Turner Valley Royalties No. 1 was completed as an oil well--previous production had been primarily naptha or natural gasoline --that intensive development of the field really began.¹³ Thus the Western Canadian petroleum industry had been in an essentially precarious position throughout the period of federal administration of resources.

The policy of the Department of the Interior, while probably based largely on trial-and-error, "... seems to have been adapted very wisely to the interests of the nation as a whole; and it can scarcely be doubted that the substantial measure of success that has since attended the development of both petroleum and natural gas may fairly be attributed in no small measure to this preliminary encouragement."¹⁴ There does not appear to have been any attempt to extract maximum revenues from the industry. However, it is questionable whether, had such an

¹³E. J. Hanson, Dynamic Decade (Toronto: McClelland and Stewart, Ltd., 1958), pp. 43-48. See also Beach and Irwin, pp. 22-24.

¹⁴Martin, p. 460.

attempt been made, the volume of exploration would not have been seriously inhibited.¹⁵

The Department of Lands and Mines

The Alberta Department of Lands and Mines, which was established to administer the newly acquired resources, had as its first Deputy Minister a former official of the Department of the Interior, and obtained the relevant Dominion records.¹⁶ The Province was therefore almost immediately in a position to carry out a coherent lands policy.

The federal regulations remained in force until mid-1931, when provincial policy was asserted in the Provincial Lands Act.¹⁷ However, the system adopted under this Act was practically the same as that which prevailed prior to the transfer. Not until 1936 were any significant changes made; by then it had become apparent with the advancement of exploratory methods that, in order for a prospector

¹⁵ The Province seemed to agree in principle with Dominion policy. Five years after assuming control of its resources it increased the size of lease groups for application of credits on rentals to 50,000 acres and allowed rentals to be so defrayed for the first twelve years of a lease. This acreage was however decreased to 19,200 acres in 1941. Submission to Royal Commission on Energy, pp. 10-11.

¹⁶ Martin, p. 492.

¹⁷ Statutes of Alberta, 21 Geo. V, c. 43 (1931).

to properly evaluate the potential of a formation, areas greater than the three sections granted under prospecting permits were necessary, and the acreage of such permits was left at the Minister's discretion. In the following year prospecting permits were replaced by petroleum and natural gas reservations, which were of a maximum area of 50,000 acres, and in 1941 this area was increased four-fold. The acreage obtainable under lease was also increased in 1941, from three to fifteen sections.

There were no further major changes in Alberta's petroleum and natural gas land policy until 1947. In February of that year, Imperial Oil completed a well which ushered in the Leduc field and the systematic and successful development of the Province's petroleum potential.¹⁸ In July, the maximum acreage which could be held under a petroleum and natural gas reservation was reduced to the present size of 100,000 acres; a person was permitted to hold at any one time only two, rather than three, reservations and they were made nonassignable. This change may well have been made to encourage exploration by more concerns.

Of more importance to the present study were the leasing regulations of August, 1947, which, while increasing the maximum

¹⁸Hanson, pp. 66-110, provides a description of the post-Leduc development of the petroleum and natural gas industry in Alberta.

size of a lease to sixteen sections, required that a Crown reserve of equal acreage be created in close proximity to each lease granted by the Crown in the Province.¹⁹ Leases selected from a reservation could touch only at the corners and otherwise had to be separated by at least one mile. This meant that such lease selections could encompass at most one half of the reservation; the remainder reverted to the Province for subsequent disposal.²⁰ Further, it became impossible to acquire large areas through congruent leases and thereby obtain control of the production from any one pool.

In March, 1948, the lease size was reduced to its present area of nine sections, with the provision that the length of a lease could be no more than four miles and could not be greater than twice its breadth. Therefore, the maximum area could only be acquired through a three-mile square lease; a rectangular lease could be no larger than eight sections.

The royalty of five per cent on sales of petroleum set by the Department of the Interior in 1930 remained in force for five years, as had been agreed, and the royalty assessed for the following five years abided by the Federal stipulation for that period and was

¹⁹Submission to Royal Commission on Energy, pp.11-12. A more detailed discussion of Crown reserves appears below.

²⁰This modification was to have important repercussions on the provincial treasury. See Chapter IV.

ten per cent of sales. From January, 1940, to June, 1941, the royalty on petroleum from leases acquired after the transfer of resources was twelve and one-half per cent of sales,²¹ after which the "square-root" formula was introduced for calculation of the royalty due on all products other than natural gas. This formula set the monthly royalty at that percentage of the products equivalent to the square root of the average daily production, subject to a maximum of fifteen per cent and a minimum of five per cent.²² If, for example, a well produces on the average sixty-four barrels each day that is on production during the month, royalty is assessed at eight per cent; the royalty on production up to 25 barrels per day is five per cent, and, if production is 225 barrels per day or more, the royalty is fifteen per cent. However, with the first return for the well an election could be made to pay royalty until the end of May, 1951, at twelve and a half per cent of all products other than natural gas. The royalty on natural gas was set in 1941 for a ten year period at fifteen per cent of the selling price, or one-quarter of one cent per thousand cubic feet, whichever higher.²³

²¹The royalty assessed on leases held prior to the transfer remained at ten per cent.

²²N. E. Tanner, "The Oil and Gas Law of the Province of Alberta, Canada," First Annual Institute on Oil and Gas Law and Taxation (Southwestern Legal Foundation. New York: Matthew Bender and Co., Inc., 1949), p. 329.

²³This minimum was increased in 1948 to three-quarters of one cent per thousand cubic feet.

It has been noted that much of the Crown mineral rights underly privately held surface rights, and that the federal policy had been that an agreement had to be reached between the holder of the petroleum and natural gas lease and the owner of the surface before the former could commence operations.²⁴ This policy was continued by the Provincial Government, and in 1947 the Right of Entry Arbitration Act²⁵ was passed to facilitate access to the surface by the lessee without litigation, while allowing the surface owner compensation for loss of land and for damage or inconvenience. The operator must attempt to reach a settlement with the landholder before applying to the Right of Entry Arbitration Board, but the Board's rulings, though subject to review, are binding. In cases where the Crown owns the surface, the lessee may appeal to the Board without dealing first with the relevant government department; as such land is usually vacant and more remote, compensation to the Crown is generally considerably lower than that to an individual, unless valuable timber is destroyed.²⁶

²⁴Under common law, the practice was to consider a lease on minerals as carrying with it the right to enter on the surface to develop the minerals without payment of compensation. H. T. Emery, "Some Legal Aspects of Oil Development in Alberta", Canadian Bar Review, XXVIII, No. 10 (December, 1950), 1080.

²⁵Statutes of Alberta, 11 Geo. VI, c. 24 (1947).

²⁶Submission to Royal Commission on Energy, pp. 39-42.

In view of the importance of the concept of Crown reserves to both the industry and the Province, it is proposed to discuss the evolution of them at this point.²⁷ Crown reserves were first established in 1937, when petroleum and natural gas in odd-numbered sections except school lands north of township fifty-two²⁸ and acreages of equal area to and adjoining leases in unsurveyed regions of Alberta and in forest reserves, became Crown reserves. These regulations were, however, rescinded in 1941. In that year, fifteen areas comprising over fourteen thousand square miles and considered potentially valuable for petroleum and natural gas were set aside as Provincial reserves for future development. One of these areas--the Antelope Plains Provincial Reserve--was made available to the Federal Government during the Second World War for military purposes, and that agreement remains in force.

In 1944, new regulations defined Crown petroleum and natural gas in the following as constituting Crown reserves: the fourteen remaining Provincial reserves; an area of equal acreage adjoining leases in all unsurveyed territory, and in forest reserves and surveyed

²⁷The discussion is based on H.H. Somerville, 'Alberta's Crown Reserves' (Speech to a Joint Technical Meeting of the Canadian Institute of Mining and Metallurgy, Petroleum and Natural Gas Division, and the Geological Association of Canada. Calgary, Alberta, May, 1954; mimeographed), pp. 2-10.

²⁸This line runs through the city of Edmonton.

regions north of the North Saskatchewan River;²⁹ and fractional areas of less than one quarter-section.

Until 1944 it was impossible to lease Crown reserve petroleum and natural gas rights. In that year it was provided that an applicant for a lease could at the same time apply for a lease of the attendant Crown reserve on payment of a royalty on the products therefrom of one and one-half times that applicable to "ordinary" leases. However, very few leases were disposed of in this way during the three years in which these regulations were in force.

After the Leduc discovery of 1947, Crown reserve regulations were made applicable to the entire Province. For each lease granted by the Crown in surveyed territory an equal area in the same township was to be set aside as Crown reserve, and in unsurveyed regions Crown reserve was required on all sides of the lease.³⁰

In 1948 the Province invited tenders for leases of Crown reserves in the Leduc area, with bidding to take the form of an overriding royalty. However, it "...became apparent how difficult it would be for an operator to pay these high overriding gross royalties especially during the declining years of the well and subsequent to that time leases

²⁹This provision was amended in 1946 to be applicable to leases in forest reserves and surveyed territory north of township sixty.

³⁰The Provincial reserves and fractional areas remained as Crown reserves.

have generally been offered on the basis of cash competition with a few exceptions for parcels in semi-proven areas where the basis of competition was still cash but the notice of sale required an overriding royalty of 15% on all products other than natural gas..."³¹ Reservations in Provincial reserves were first offered for sale, on a cash bonus basis, in 1944.³²

The Department of Mines and Minerals

In recognition of the growing importance of the petroleum and natural gas industry to the Province, the Department of Mines and Minerals was created solely to administer the Mines and Minerals Act,³³ which came into force in 1949.³⁴ Many of the previous regulations were continued under this Act; in fact changes in petroleum and natural gas lease and reservation provisions were relatively minor until 1962. However, various additional forms of disposition of Crown rights were instituted to supplement the above as the requirements of the industry became more diverse.³⁵

³¹ Somerville, pp. 8-9.

³² A number of additional forms of disposal of Crown reserves were instituted by the Department of Mines and Minerals; these will be discussed below.

³³ Statutes of Alberta, 13 Geo VI, c. 66 (1949).

³⁴ The other functions formerly performed by the Department of Lands and Mines were assumed by the Department of Lands and Forests.

³⁵ A full discussion of the regulations under the Mines and

In 1951 natural gas licences were established,³⁶ giving an operator who has discovered only natural gas in drilling on a reservation the right to develop the potential of the geologic zone or zones in which the gas was found. These licences may remain in force for up to three years, providing a continuous drilling programme is being carried out. The fee for a licence is \$250, and the rental is five cents per acre for each half-year. The licensee at any time before the termination of the licence may apply for a lease of the natural gas in any zone or zones of proven commercial producibility, the area allowed under lease being dependent upon the number and depth of producible wells drilled on the licence. These natural gas leases are of a term of twenty-one years, subject to renewal for further terms over their producible life, and are subject to an annual rental of thirty-three and one-third cents per acre if a market is available, or otherwise ten cents an acre.

Crown reserve natural gas licences were introduced in 1952.³⁷ These are similar to the above licences, except that they are offered after advertisement on a cash tender basis, and include all of the natural gas in an area rather than specifying the zone or zones.

Minerals Act, 1962, and a comparison with those under the Mines and Minerals Act, is provided in Chapter III.

³⁶ Alberta, Order in Council No. 122/51 (January 29, 1951).

³⁷ Alberta, Order in Council No. 1705/52 (December 1, 1952).

Leases are earned in the same way. Natural gas licences are "... intended to make the development of natural gas reserves more attractive for those who in the search for oil have discovered natural gas."³⁸

Regulations governing the granting of Crown reserve drilling reservations were established in 1954.³⁹ Such reservations are offered on a cash bonus basis⁴⁰ at advertised sales. A drilling reservation may be in force for up to three years subject to a semi-annual rental of twenty-five cents per acre, so long as a drilling programme is being conducted. The holder must begin drilling to a zone specified in the notice of sale within one year and must make a selection of leases within three months in the event of the discovery of oil in commercial quantity, the maximum area which may be acquired under lease also having been stated in the advertisement.

In 1951, the square-root formula for calculating royalties was dropped when new regulations came into force for a further ten years.⁴¹ The royalty on crude oil was graduated with production, with

³⁸Department of Mines and Minerals of the Province of Alberta, "The Disposition of Petroleum and Natural Gas Rights in Alberta" (Edmonton: mimeographed, n.d.), p. 3.

³⁹ Alberta, Order in Council No. 581/54 (April 23, 1954.)

⁴⁰In addition, there is a fee of \$250 for a drilling reservation.

⁴¹In fact, these royalties were applicable until April 1, 1962.

a maximum of sixteen and two-thirds per cent for wells producing over 4050 barrels per month, and decreasing in stages to a minimum of five per cent on production up to 600 barrels per month. The following table shows the royalty applicable on crude oil during that period:

TABLE 3. -- Royalty payable on crude oil production; 1951-1962

<u>Monthly Production</u>	<u>Crown Royalty</u>
0 - 600 barrels	5 per cent of total output
600 - 750 barrels	30 barrels plus 14 per cent of output over 600
750 - 950 barrels	51 barrels plus 17 per cent of output over 750
950 - 1150 barrels	85 barrels plus 18 per cent of output over 950
1150 - 1500 barrels	121 barrels plus 19 per cent of output over 1150
1500 - 1800 barrels	12 1/2 per cent of total output
1800 - 4050 barrels	225 barrels plus 20 per cent of output over 1800
4050 barrels and over	16 2/3 per cent of total output.

Source: E. J. Hanson, Dynamic Decade (Toronto: McClelland and Stewart Ltd., 1958), p. 196.

The royalty on natural gas sold, or consumed for a useful purpose, was fifteen per cent of the selling price or fair value at the well-head, subject to a minimum of three-quarters of one cent per thousand cubic feet unless the gas was processed to produce sulphur, liquid hydrocarbons, or carbon dioxide. The royalty on sulphur derived from natural gas and on fluid hydrocarbons was twelve and one-half per cent.

The above regulations were rescinded and replaced on April

first, 1962.⁴² Since that date, the royalty on crude oil has been as follows:

TABLE 4. -- Present royalty on crude oil

<u>Monthly Production</u>	<u>Crown Royalty</u>
0 - 750 barrels	8 per cent of total output
750 - 2700 barrels	60 barrels plus 20 per cent of output over 750
2700 barrels and over	16 2/3 per cent of total output

Source: Alberta, Order in Council No. 256/62 (February 21, 1962), Schedule.

The royalty on natural gas sold or consumed for some useful purpose was increased to sixteen and two-thirds per cent of selling price on fair value at the time and place of production. The minimum, however, remained at three-quarters of one cent per thousand cubic feet, with the same exceptions as before. The differential in royalty between natural gas per se and the products obtained therefrom was discontinued; such derivatives as sulphur and fluid hydrocarbons also became subject to a sixteen and two-thirds per cent royalty.

It is estimated that these increases in royalty will result in an increase of between five and six million dollars per year in revenue to the Province.⁴³

⁴² Alberta, Order in Council No. 256/62 (February 21, 1962).

⁴³ The Edmonton Journal, February 24, 1962, p.23.

The policy of the Government of Alberta with respect to its petroleum and natural gas resources may be summed up from a statement made by N.E. Tanner, who was then Minister of Mines and Minerals, in 1949.

...we are determined to do all we can to encourage development.... We are convinced that this can best be done through free enterprise, where there is good wholesome competition, with the least possible Government restrictions and regulations.... We are determined to carry on with this policy and have made it clear to capital elsewhere in Canada and in the United States that we welcome this capital in the development of our natural resources.... The Government, on the other hand, has a responsibility, and is determined to see that there shall be no monopoly permitted and that the interests of the people are protected....⁴⁴

One feels that the principles of this statement have by and large been adhered to. The revision of the Mines and Minerals Act in 1962 reflected the adaptability of the Government to changing circumstances, and is sufficiently comprehensive to warrant full discussion.

⁴⁴Tanner, First Annual Institute on Oil and Gas Law and Taxation, p. 341.

CHAPTER III

THE MINES AND MINERALS ACT, 1962

The Mines and Minerals Act, 1962,¹ which came into force on June 1, 1962, represents the first comprehensive revision in the post-Leduc period of the regulations governing the disposition of Crown petroleum and natural gas. The changes primarily are designed to encourage a resurgence of exploratory activity.

The Oil and Gas Law Revision Committee was constituted in June, 1961, with representatives of both industry and government, "... to make a comprehensive study of existing legislation and regulations pertaining to the exploration, development and marketing of oil and gas resources of the Province"². The Report of the Committee, which was submitted January, 1962, stated that

It is the opinion of your committee that the present system of tenure and Crown reserves tends to curtail primary exploration by the greatly increased number of companies anxious to participate in the discovery and development of oil and gas resources in the Province.

The system seems to have definitely contributed to the spending of money in drilling of development wells in marginal areas instead of in primary exploration in the locating of new oil and gas fields. Your committee's recommendations are largely aimed at a system.

¹Statutes of Alberta, 11 Elizabeth II, c.49 (1962).

²Hon. E. C. Manning, "Address to the Canadian Petroleum Association" (Calgary; March 20, 1962), in Daily Oil Bulletin, March 21, 1962, p.1.

which will permit a more rapid turn-over of undrilled acreage so as to encourage more primary exploration and the discovery of new oil and gas reserves.³

Most of the recommendations of the Report were implemented in the new Act and in the regulations made thereunder.

The proven crude oil reserves of Canada have increased markedly over the past decade. However, a high proportion of this increase has arisen from the expansion of known fields rather than from the discovery of new pools. This is evident from the following table.

TABLE 5. -- Increase in proven reserves of crude petroleum in Canada, 1951-61

New Oil Added During Year (millions of barrels)			
	Through revisions of previous estimates and extensions to known fields	Through discoveries of new fields and of new pools in old fields	Total
1951	84	137	221
1952	61	302	363
1953	152	95	247
1954	360	98	458
1955	366	64	429
1956	461	48	509
1957	167	40	207
1958	448	9	457
1959	421	94	515
1960	350	22	373
1961	695	21	716

Source: Canadian Petroleum Association, 1961 Statistical Year Book (Calgary: 1962), p.42.

³Report of Oil and Gas Law Revision Committee (Edmonton: mimeographed, 1962), pp. 2-3.

The concern of the Oil and Gas Law Revision Committee with encouragement of primary exploration would therefore appear to be well founded.

One significant innovation of The Mines and Minerals Act, 1962 is the establishment of "Block A", which is that part of the Province in townships one to sixty-four inclusive between the fourth and fifth meridians.⁴ It is considered that this region "... seems to have been explored to the degree that it is reasonably improbable to anticipate the discovery of an extensive oil field".⁵ In order to encourage further exploration in this area, more generous terms of acquisition of Crown rights were made applicable to it.

Crown reserves were discontinued within Block A. The three Provincial reserves which had existed in that area -- the Crow Indian Lake, Lucky Strike, and Dorothy reserves -- were therefore abolished. Further, petroleum and natural gas permits were introduced and substituted for petroleum and natural gas reservations as the form of disposition of Crown rights for exploratory purposes within the Block.

The regulations governing petroleum and natural gas permits⁶ came into effect with the Act. The maximum area which may be included in a permit is thirty-six sections, but there is no limit on the number of

⁴The Mines and Minerals Act, 1962, s.109, cl. (a).

⁵Report of Oil and Gas Law Revision Committee, pp. 7-8.

⁶Alberta, Order in Council No. 606/62 (April 30, 1962).

permits which a person may hold at any one time. Two methods of acquisition are laid down; where the lands had been Provincial reserves or classified generally as Crown reserves under the former Act, one may request that the Department of Mines and Minerals advertize the rights for sale and then bid for the parcel on a cash bonus basis, but where the lands had been generally available prior to the 1962 Act, one may acquire a permit by application.

The fee for a permit is ten dollars, and the rental on lands so held is fifty cents per acre for the six-month term of the permit. Up to three renewals of six months each may be granted on payment of further rentals at the same rate. In effect, then, permits may be held unconditionally for two years at an annual rental of one dollar per acre. Two further renewals may be granted on the same terms if a well is being drilled on the area under permit at the expiry of the third renewal.

Although it is not necessary to drill during the first two years of the permit, an incentive to do so is offered through reductions in rentals. If the permittee commences such operations during the initial term, a refund of thirty cents per acre is made. Similarly, refunds of twenty cents and ten cents per acre are made if drilling is begun during first and second renewals respectively.

The right to select petroleum and natural gas leases from the lands held under permit is subject to the drilling of an exploratory well, but, after complying with this stipulation, the permittee may acquire

under lease all of the lands covered by the permit.⁷ Up to fifty per cent of drilling expenditures incurred may be applied to the first year's rental on any leases acquired out of the permit.

Extensive changes appear in the regulations governing petroleum and natural gas leases under the 1962 Act. One change is that leases need no longer be square or rectangular in shape; any group of locations may be included in one lease so long as its component parts corner or adjoin and would be encompassed in a three mile square or a four mile by two mile rectangle.⁸ Holders of existing leases which corner or adjoin may now consolidate their parcels to conform to the above provisions. Further, it is no longer possible to obtain leases directly in unsurveyed territory; they now can be acquired in such regions only from a petroleum and natural gas reservations or through an order of the Lieutenant Governor in Council.

The term of leases granted after June 1, 1962, was reduced from twenty-one years to ten years. Renewals may be granted during the productive life of a lease in ten-year sequences, but for each pro-

⁷If in drilling on the area under permit only natural gas is discovered, the permittee may apply for a natural gas license of the zone or zones in which the gas is discovered.

⁸Mines and Minerals Act, 1962, s.114, cl.2.

The minimum area which may be acquired under lease is one quarter section, except that leases applied for out of a reservation or permit may comprise only a legal subdivision.

Petroleum and natural gas leases will hereafter be referred to as leases. These are distinct from natural gas leases.

ducing well only its spacing unit, which is the area allocated to it by the Oil and Gas Conservation Board for drilling and production purposes, or one section, whichever larger, may be renewed.⁹ If a well is being drilled on a lease at the expiry of its term, one section may continue under lease during the drilling of the hole and, if the well is capable of production, the lease is renewed as though the well had been completed before the expiry of the term. Should that well be abandoned, the same section continues under lease for ninety days, and may be further extended if drilling of another well is begun during that period.

An "offset" well must be drilled on a location within ninety days if petroleum is being produced from an adjoining spacing unit the petroleum and natural gas rights on which are not owned by the Province.¹⁰ This requirement was also in the former Act, and is designed to prevent a freehold well draining oil from a portion of a pool to which there are Crown rights. The lessee may however now defer this obligation through payment of a compensatory royalty. For the first two years after the expiry of the ninety-day limit, this royalty is assessed at one-half of the royalty that would have been payable to the Province if the production of the freehold well were in fact from the Crown lease, and thereafter the

⁹ The Mines and Minerals Act, 1962, s.126

Under the former Act, the entire lease area was renewable so long as a location was capable of commercial production.

¹⁰ The Mines and Minerals Act, 1962, ss. 133-34.

Compare with Statutes of Alberta, 13 Geo. VI, c.66 (1949),

"The Mines and Minerals Act," s.257.

full royalty rate is applied. If the lessee wishes neither to drill the offset well nor to pay the compensatory royalty, he may surrender only the spacing unit in which he is required to drill, and retain the remainder of the lease. If the freehold well produces from a strata different to that from which the spacing unit on Crown land is expected to produce, the lessee may surrender just the zone in which the offset well is required.

Apart from the above, no drilling requirement is specified for leases granted under the present regulations. A clause existed in the former Act stipulating that drilling be commenced on a lease within one year,¹¹ but it was not strictly enforced "...because potential production from existing wells has been so much greater than market requirements".¹²

Drilling requirements are now imposed on leases granted prior to June, 1962,¹³ such that it will after 1967 be impossible to hold a lease

¹¹The Mines and Minerals Act, s.251.

Further work requirements under that Act, none of which were rigidly enforced, stipulated that if a well was abandoned, the drilling of a second well on the location had to begin within six months, or if a well was completed as a producer the drilling of another well had to begin within ninety days. The Minister was empowered to defer these requirements.

¹²The Edmonton Journal, February 24, 1962, p.23.

¹³On August 19, 1947, an amendment was made to the regulations to permit the granting of renewals so long as the location was capable of petroleum or natural gas production. These drilling requirements apply only to leases granted after that date. Leases granted prior to this amendment were renewable irrespective of production; holders of such leases will be entitled on termination of their lease to a new lease for a primary term of ten years.

Manning, Daily Oil Bulletin, March 21, 1962, p.2.

for more than ten years without having drilled on it, unless there exists on the lease a producing well, or the rental on the lease has been reduced because it is deemed to be within a natural gas field, or the lease has been integrated with others in a field to facilitate a co-ordinated production programme or "unit operation" for that field. The Minister may serve notice on the lessee that drilling must be commenced within one year. These notices will be served first on those leases which have reached the end of the fifteenth year of their term before or during 1961. After January 1, 1963, notice may be given on leases which have reached the end of the fourteenth year of their term before or during 1962, and so on, until after January 1, 1967, notices may be issued on any lease which has reached the end of the tenth year of its term.¹⁴

As some of the leases affected by this regulation cover small acreages, provision is made for grouping any leases held by the lessee for the purpose of drilling to comply with a notice, so long as the leases to be included in a group are neither subject to offset requirements, part of a unit operation, nor presently containing a producing well. Such groups, however, may not comprise more than six sections where the intended depth of the well is less than three thousand feet. They may be as large as eight sections if it is proposed to drill to between three thousand and six thousand feet, and may include twelve sections if the

¹⁴The Mines and Minerals Act, 1962, ss.164-65.

well is to be of a depth of not less than six thousand feet. An additional two sections may be added to the group for each thousand feet of intended depth in excess of eight thousand feet.¹⁵ Irrespective of whether the well proves to be productive, the lease or any lease in the group may then continue for its full twenty-one year term, after which it may be renewed in the same way as leases granted under the present Act.

It is possible to defer drilling on a lease on which a notice has been served for four years beyond the one-year deadline on payment of a cash penalty of one dollar per acre for the first year, and three, five and nine dollars per acre for the second, third and fourth years respectively.¹⁶

The rental provisions for leases under The Mines and Minerals Act, 1962 are the same as those under the former Act. The annual rental is one dollar per acre. This may be reduced to fifty cents an acre if the lessee proves through drilling that his lease is within a natural gas field.¹⁷ A similar reduction applies to the spacing unit of any well cap-

¹⁵The concept of grouping leases to satisfy drilling requirements existed under The Mines and Minerals Act. A lessee could group his leases any portion of which were located within a three mile radius of the projected well site, so long as the total area of such a group did not exceed 11,520 acres, that is, eighteen sections.

The Mines and Minerals Act, s.260.

¹⁶The Mines and Minerals Act, 1962, s.167.

¹⁷Before such a reduction becomes effective, the Minister may require the lessee to drill to a specified formation to search for oil.

able of producing only natural gas so long as no petroleum is being produced from the lease. In the absence of an adequate market for the lessee's gas the rental may be further reduced to twenty-five cents an acre. These reductions are of course subject to cancellation in the event of discovery of petroleum in any well on the lease.

The regulations governing petroleum and natural gas reservations were also amended, effective June 1, 1962.¹⁸ However, reservations¹⁹ in force on that date remained subject to the former regulations in all respects.

Reservations may no longer be acquired in Block A, where they have been superceded by petroleum and natural gas permits. In all other areas of the Province except Crown reserves, reservations may be obtained, as before, by application. A fee of \$250, plus a deposit of \$2,500 for each twenty thousand acres applied for, must accompany the application. The deposit is held as a guarantee that an examination of the reservation will be undertaken in accordance with the regulations, and is refunded on completion of satisfactory work.

The maximum area of a reservation may not exceed four and one-third townships, which is slightly less than the former maximum of one

¹⁸ Alberta, Order in Council No. 607/62 (April 30, 1962).

¹⁹ Petroleum and natural gas reservations will be referred to simply as reservations. These are distinct from Crown reserve drilling reservations.

hundred thousand acres. The length of the parcel applied for shall not be more than three times its breadth, except by special consent of the Minister.

The term of a reservation remains at four months. However, whereas under the previous regulations any reservation issued after October the first did not become effective until the following January, the term now begins in all cases on the date of issue.

As under the previous regulations, it is required that the holder must submit to the Director of Minerals a plan of the proposed examination of the reservation. Where a person holds more than one reservation, he may now group them under one plan so long as the area of the combined holdings does not exceed two hundred thousand acres.

If the plan of examination is satisfactory, the reservation may be renewed for another four months. Within eight months a progress report, which is to include an estimate of costs incurred, must be submitted. If the work performed is deemed to be adequate, the reservation may be renewed for a further four months. So far, former and present regulations are parallel; one may hold a reservation for one year rent-free upon certain conditions.

Under the previous regulations, four further renewals of three months each could be granted on payment of seven cents per acre for each of the first two and eight cents per acre for each of the second two. Where the nature of the terrain or the inaccessibility of the area or other

conditions over which the holder had no control delayed examination of the reservation, each of these renewals could be extended for a second three-month term upon the approval of a Board of Arbitrators. Therefore a reservation could in these circumstances be held for three years without drilling. A further indefinite extension could be granted by the Minister in cases where conditions over which the holder had no control seriously retarded the examination. If drilling had been or was being conducted on the reservation at the close of the final renewal or extension, and it was proposed to continue such operations beyond that time, up to four more renewals of three months each could be granted at twenty-five cents an acre if drilling was being carried out and was impossible to complete before the termination of the reservation.

Under the present regulations, up to four renewals of six months each may be granted beyond the first year of the reservation upon payment of a fee of ten cents per acre for each renewal. If at the end of the final renewal, that is, after the reservation has been in force for three years, the Minister agrees that conditions over which the holder has no control have precluded completion of the examination, he may grant a further extension of up to two years under such conditions as he sees fit. The provisions governing the granting of up to six further renewals in the case of drilling being conducted at the close of the above renewals or extension are essentially unchanged. The holder may, however, group with the reservation on which drilling is being conducted his other reser-

vations on up to a combined acreage of two hundred thousand acres, so that drilling on any lands in the group qualify each of the reservations in the group for renewal under this condition. This grouping may be done at any time before the granting of the first "drilling" renewal.

The provisions for selection of leases from a reservation are substantially the same as those under the former regulations. At any time during the currency of a reservation, the holder may make applications to lease up to one half of the area in each township making up the reservation. A block comprising a lease or leases may not be larger than three miles square or four miles by two miles, and the blocks may corner but otherwise must be separated by at least one mile. Crown reserves are established consisting of an area at least one mile in width surrounding each location or concentration of leases and the portions of a checker-board pattern not permitted under lease, and any other areas which the Minister may select. The portions of the reservation not selected as leases or required as Crown reserves continue under reservation.

If petroleum in commercial quantity is discovered while drilling on a reservation, the holder must apply for a lease of the location within three months of the discovery. The drilling of another well on the reservation within four and one-half miles of the discovery is prohibited until this has been done.

There are, however, some differences between the former and the present provisions regarding the selection of leases from reservations.

Firstly, it used to be the case that no lease could be selected within one-half mile of the border, unless Crown reserves at least one mile deep had been established in Crown lands adjoining the border or the holders of adjoining reservations agreed to certain provisions with respect to Crown reserves. This restriction does not appear in the present regulations. Secondly, it is still possible to apply up to one half of the exploratory and drilling expenditures incurred on the reservation as credit to one year's rental²⁰ of any lease or leases acquired out of that reservation, but, when reservations have been grouped either for submission of a plan or for "drilling" renewals, that portion of the credit granted by virtue of drilling expenses on one of the reservations may now be applied to the first year's rental of any leases acquired out of the other reservations in the group.

The regulations governing Crown reserve drilling reservations²¹ for all practical purposes remain unchanged, except that Block A is of course excluded under the current regulations because of the abolition of Crown reserves therein. Drilling reservations are acquired by cash tender on advertized rights. The fee is \$250, and the rental is twenty-five cents per acre for the six-month term. Up to five renewals of six months each may be granted on payment of rentals of twenty-five cents per acre for

²⁰It is stipulated in the current regulations that such credits may be applied only to the rental for the first year of the lease.

²¹Alberta, Order in Council No. 722/62 (May 17, 1962).

each renewal.²²

Within one year of the date of the drilling reservation, the holder must commence drilling to search for oil and, in the event that oil is not discovered in commercial quantity, a second well must be begun within three months of the termination of operations on the first. Where drilling has been delayed because of weather, physical or other conditions beyond the control of the holder, the Minister may allow the suspension of drilling for up to six months on such terms as he sees fit.

At any time prior to the expiry of a drilling reservation, the holder may apply for a lease or leases from it, provided he has complied with the regulations. No leases will be issued unless a well has been drilled to the zone specified in the notice making the rights available or to a depth that indicates either that the zone is not present or is likely to occur at excessive depth because of folding or faulting of the strata, or oil has been discovered in commercial quantity in any zone.

The maximum area which may be acquired under lease is stipulated in the notice of disposition. Expenses incurred in drilling on the reservation may be credited towards the first year's rental on any leases obtained from the reservation.

In the event that oil is discovered in commercial quantity on a

²²Under the former regulations, the holder of a drilling reservation had to file a progress report when applying for each renewal. This requirement has been dropped.

drilling reservation, the holder must complete the well as a producer or deepen it. Within three months of the discovery or the termination of the deepening of the hole, the holder must apply for a lease or leases from the reservation, and no further drilling is permitted until this is done.

When application is made for leases the reservation automatically terminates unless the holder, having discovered oil and selected his leases, agrees to commence the drilling of another well on the reservation before an agreed date to test for oil in a zone other than that in which the discovery was made. If oil is discovered in the other zone, the holder is permitted to amend his original application for leases. The total acreage applied for must, however, remain not greater than the area indicated in the notice of sale.

Natural gas licence regulations²³ remain much as before. Licences granted under the former regulations but still in force on June 1, 1962, continued under those regulations, but any leases granted out of such licences became subject to the new regulations. If the holder of a reservation or a permit determines the presence of natural gas²⁴ through drilling, he may apply for a natural gas licence of the zone or zones con-

²³ Alberta, Order in Council No. 776/62 (May 24, 1962).

²⁴ Natural gas "means the production from any well that, in the opinion of the Oil and Gas Conservation Board, initially produces gas either alone or with oil at a gas-oil ratio of ten thousand cubic feet to the barrel or higher".

The Mines and Minerals Act, 1962, s. 148, cl. 3 (a).

taining the natural gas. One modification of the new regulation is that, whereas formerly there was no area limitation on a natural gas licence other than the size of the reservation, there is now a maximum of thirty-six sections for each licence. An applicant holding adjoining reservations or permits may include in his application lands from both parcels. There is no limit to the number of licences a person may hold at any one time.

Before the granting of a licence the applicant must furnish information regarding the natural gas found in the zone or zones for which application is made. The fee for a licence is \$250, and rental is five cents per acre for the six-month term of the licence. Up to five renewals of six months each may be granted on payment of further rentals at the same rate.²⁵

It is required that the licensee begin drilling with three months of the date of issue to test for natural gas in the zone or zones specified. Within three months of the completion or abandonment of the first well, the drilling of another must be commenced, and so on. Should natural gas in commercial quantities be discovered in a zone not included in the licence, such zone may be surrendered out of the reservation or permit or the leases granted therefrom, and included in the licence. Again, where drilling is delayed because of conditions beyond the control of the licensee, consent may be given to suspension of operations for a period of up to six months, subject to any terms which may be prescribed at the

²⁵ Under the former regulations, a progress report had to be filed with each application for renewal.

time.

Prior to the termination of a licence, the licensee may apply to lease the natural gas discovered through drilling in the zone or zones specified in the licence. The area which may be acquired under natural gas lease depends upon the number of wells drilled on the licence which have determined the presence of commercial quantities of natural gas, and upon the depth of those wells. Six sections may be leased for each such well at a depth not exceeding three thousand feet, eight sections may be leased where the depth of the well is between three thousand and six thousand feet, and ten sections may be leased where the depth is more than six thousand feet, with one further section being permitted under lease for each additional thousand feet. If one well has discovered gas in commercial quantity in more than one zone, the depth of the deepest zone in which the well was completed is used to determine the number of sections which the licensee is entitled to acquire under lease by virtue of that well.

Notwithstanding the above, if the licensee has, by the drilling of adequately spaced wells, delimited a field of natural gas within the licensed area, he may acquire natural gas leases of the field so delimited in the zones described in the licence. Crown reserves are not required to be established when natural gas leases are granted.

"In view of the uncertainty of obtaining markets for natural gas

....",²⁶ the term of natural gas leases remains at twenty-one years. Renewals may be granted as long as the location is capable of producing natural gas in commercial quantity.

The annual rental of natural gas leases is thirty-three and one-third cents per acre, but may be reduced at the Minister's discretion to ten cents an acre in cases where an adequate market is not available to the lessee. Drilling expenses incurred on a natural gas licence may be credited towards the first year's rental on any lease acquired out of the licence.

The lessee must commence drilling on a natural gas lease within six months of being notified by the Minister to do so, and must begin a second well within six months, or such longer period as the Minister directs, of the termination of the first.²⁷ This stipulation is designed to guarantee that a supply of natural gas will be available when required by the market.²⁸

Upon surrender of a licence or of all subsisting leases granted out of a licence, the holder of a reservation or permit may be allowed, at the Minister's discretion, to have the gas rights contained in the licence or leases that lie within the reservation or permit included in the

²⁶Report of Oil and Gas Law Revision Committee, p. 10.

²⁷The Mines and Minerals Act, 1962, s. 153.

²⁸Report of Oil and Gas Law Revision Committee, p. 10.

reservation or permit. Similarly, the holder of leases granted out of a reservation or permit may be entitled to include in these leases that part of the natural gas rights contained within them but held separately under natural gas licence or lease, upon surrender of his licence of the area or of all leases granted out of it.

Crown reserve natural gas licences²⁹ continue to be similar to natural gas licences, except that they are granted to the highest bidder at an advertized tender, rather than by application, and include all of the natural gas underlying a location. The fee and rental are the same for natural gas licences and Crown reserve natural gas licences, as are the new acreage limitation, the number of renewals permitted, the work requirements, and the conditions under which leases may be granted.³⁰

Under both the former and the present regulations, provision is made for conversion to a petroleum and natural gas lease if oil is discovered while drilling on Crown reserve in a zone or zones held under natural gas licence or lease. A petroleum and natural gas lease of the quarter section in which the discovery was made may be obtained upon surrender out of the licence or lease of three quarter-sections of Crown

²⁹Alberta, Order in Council No. 807/62 (May 31, 1962).

³⁰The provision that, if the licensee has delimited a natural gas field through the drilling of adequately spaced wells, he may acquire natural gas leases of the field so delimited, does not apply to Crown reserve natural gas licences.

reserves in the vicinity of the discovery.

The Mines and Minerals Act, 1962, has not been in force for sufficient time to permit an evaluation of the effect of the changes from the former Act upon the petroleum and natural gas industry. The shorter term of new petroleum and natural gas leases should result in a more rapid turn-over of undrilled acreage. The provisions for renewal of leases and the definite time limit on reservations should also contribute to this end.

CHAPTER IV

REVENUES TO THE PROVINCE OF ALBERTA FROM DISPOSITION OF CROWN MINERAL RIGHTS

Petroleum and Natural Gas Industry Expenditure on Land Acquisition and Rentals, and on Royalties

From 1947 to 1961, the petroleum and natural gas industry in Alberta spent on the average more than one-quarter of its total outlay on land acquisition, rentals and royalties. The development of the Leduc and Redwater fields¹ and a number of smaller pools led to a marked increase in such disbursements, from \$7.5 million in 1947 to \$52 million in 1950.² In the early 1950's, this expenditure was below the 1950 level, but in 1954 it was twice that of the previous year, and reached \$94 mil-

¹Production from the Leduc-Woodbend field increased rapidly from 372,000 barrels in 1947 to 4,657,000 barrels in 1948, 9,689,000 barrels in 1949, and 10,589,000 barrels in 1950. A quite steady increase during the early 1950's brought production from this field to a peak of 21,360,000 barrels in 1953.

Production from the Redwater field also increased markedly from 37,000 barrels in 1948 to 10,746,000 barrels in 1950 and 23,118,000 barrels in 1951. A maximum output of 23,975,000 barrels was reached in 1952.

Dominion Bureau of Statistics, The Crude Petroleum and Natural Gas Industry (Ottawa, annual to 1960).

² See Table 1, Appendix 1.

lion. In part, this increase may be attributed to the discovery of the Pembina field.³ The outlay on land acquisition exceeded \$100 million in both 1956 and 1957, and after declining somewhat the following year, reached its peak in 1959 at \$109 million. In 1960, however, there was a drop of \$18 million in such payments, and 1961 saw a further slight decline to \$87.5 million.

The proportion of total industry expenditure accounted for by land acquisition and rentals over the period 1947 to 1961 has fluctuated between fifteen per cent and twenty-nine per cent. Disbursements in this category were twenty-six per cent of the total in 1947. They decreased in significance to eighteen per cent in 1948, but rose to twenty-five per cent in 1949. In 1950, almost twenty-nine per cent of total expenditures were for land acquisition and rentals; this fell to slightly over fifteen per cent during the first three years of the decade, only to increase in 1954 to a peak of twenty-nine per cent. Since then, there has been a slight downward trend, interrupted only in 1957 and 1959, and in 1961 expenditure on land acquisition and rentals represented sixteen per cent of the total.

Royalty payments increased by \$4 million between 1947 and

³Production from the Pembina field began in 1954, when 800,000 barrels were produced; in 1955, 1956, and 1957, output was 14,795,000 barrels, 33,721,000 barrels, and 37,185,000 barrels. The significance of any one field to expenditure on land acquisition should not be over-emphasized, however, because of the increasing diversity of the industry's operations.

1950, to a value of \$6.5 million, then rose by a further \$5 million in 1951 and approximately maintained this increment for another four years until they had reached \$31 million in 1955. A marked increase in 1956 brought expenditures on royalties to \$41 million, a sum not exceeded until 1961. A sharp drop in royalties in 1958 to \$30 million may be traced in part to a decline in export markets for Canadian crude after the restoration of normal tanker routes disrupted during the Suez crisis.⁴ Minor increases in 1959 and 1960 brought royalties to \$35 million, and a notable increase in 1961 to \$55 million established a new peak. This reflected increased production of both oil and natural gas,⁵ and was accentuated by higher rates of Crown royalty.

Royalties as a percentage of total expenditure climbed rather steadily from three per cent in 1948 to nine point four per cent in 1957. There was a decline in 1958 to six point eight per cent, corresponding to the decrease in the absolute value of royalty payments; however, this was followed by a slight increase in 1959 to seven point four per cent. In 1961 the percentage of total expenditure on royalties rose to over ten per cent.

It is apparent from table six that the proportion of total industry

⁴See Table 9, Appendix 1.

Canada, Royal Commission on Energy; Second Report (Ottawa: mimeographed, 1959), p. 2-17.

⁵See Tables 7 and 8, Appendix 1.

TABLE 6. - - The significance of industry expenditure on land acquisition, rentals and royalties
(millions of dollars and per cent)

Year	Total Expenditure of the P.&N. G. Industry in Alberta	Land costs ⁽¹⁾ as a percentage of total expenditure	Percentage of land costs ⁽¹⁾ received by the Province	Provincial revenue from P.&N. G. lands ⁽²⁾ (3)	Per cent Prov. P.&N. G. land revenue of total revenue ⁽³⁾
1947	28.5	31.6	14	1.5	2.7
1948	67.0	20.9	46	12.5	17.7
1949	129.0	28.7	76	33.2	33.3
1950	182.0	32.1	85	44.1	37.3
1951	214.0	20.6	90	39.7	32.8
1952	262.0	22.5	90	56.8	36.7
1953	279.0	24.0	90	96.4	48.9
1954	323.0	36.8	92	80.9	42.3
1955	389.0	31.9	88	126.3	52.3
1956	472.0	30.4	93	132.2	50.5
1957	426.0	33.9	93	122.5	45.8
1958	443.0	26.6	89	108.9	39.5
1959	454.5	31.4	92	141.3	42.2
1960	480.5	26.2	90	102.8	33.4
1961	544.5	26.2	78	115.9	34.1

Source:

Tables 1-3, Appendix I.

(1) Industry expenditure on land acquisition, rentals and royalties.

(2) Rentals, royalties, and sales of Crown reserves.

(3) Revenue on income account for fiscal year ending March 31 of following year.

expenditure accounted for by land acquisition, rentals and royalties from 1947 to 1961 has fluctuated between twenty-one per cent and thirty-seven per cent. In 1947, outlays in this category comprised over thirty per cent of the total, but this proportion dropped to twenty-one per cent the following year, only to rise to thirty-two per cent in 1950 and fall back to its 1948 level in 1951. Slight increases over the next two years were overshadowed by a sharp rise to thirty-seven per cent in 1954. During the following three years, land costs made up somewhat more than thirty per cent of total expenditure, but they declined to twenty-seven per cent in 1958. In 1959 the proportion was again over thirty per cent, but in both 1960 and 1961 only twenty-six per cent of total expenditure was for land acquisition, rentals and royalties.

Proportion of Total Industry Expenditure on Land Acquisition and Rentals,
and on Royalties, Received by the Province

The proportion of total industry expenditure on land acquisition and rentals received by the Province has varied significantly over the last decade and a half.⁶ In 1947, only eight per cent of the industry's outlay on land acquisition and rentals went to the Provincial treasury, but this proportion increased rapidly to eighty-six per cent in 1950. The attention of the industry had been focused on the south-east quarter of the Province, where railway and Hudson's Bay Company land grants

⁶See Table 2, Appendix 1.

are concentrated. Most of the Leduc field lay within the area of railway grants, but much of the Redwater field lay to the north of this area, and the northern third of it was beyond the Hudson's Bay Company land grants.⁷ The sale of Crown reserves was introduced in 1948.

The Province's share of total expenditure on land acquisition and rentals continued to rise during the early 1950's, to ninety-five per cent in 1954, when the Pembina field area was of fresh interest. It remained above ninety per cent for most of the second half of the decade, reaching a peak of ninety-six per cent in 1959, declining very slightly in 1960, and falling significantly in 1961 to eighty-six per cent.

The percentage of total royalty payments going to the Province has also fluctuated somewhat, reaching local maxima of eighty-seven per cent in 1951 and ninety per cent in 1957. Between these years the percentage declined gradually to seventy-nine per cent in 1954, then rose. In 1958 there was a decrease to eighty-one per cent and approximately the same level was maintained in 1959. A moderate decline to seventy-nine per cent in 1960 was followed by a sharp drop in 1961 to sixty-four per cent.

As is shown in table six, the proportion of total industry expenditure on land acquisition, rentals and royalties received by the Province increased sharply from fourteen per cent in 1947 to seventy-

⁷Royal Commission on Energy, Exhibit C-3-2-A (Public Archives of Canada, Ottawa). See Appendix II.

six per cent in 1949, and then rose moderately to ninety per cent in 1951. This level was maintained for three years. A slight increase in 1954 was more than offset by a decline in 1955, but in both 1956 and 1957 ninety-three per cent of the industry's expenditure on land acquisition, rentals and royalties went to the Province. A decrease of four per cent in 1958 was almost offset in 1959. However, there was a slight decline in 1960 to ninety per cent, and an abrupt drop in 1961 brought the Province's share of the industry's expenditure on land acquisition, rentals and royalties to seventy-eight per cent.

Crown Reserves, Rentals, and Royalties

The Province of Alberta has been receiving part of its revenue from the disposition of its petroleum and natural gas rights every year since it obtained control of its resources from the Federal Government in 1930.⁸ Revenue from this source was not a significant part of the total, however, until after 1947.⁹

Prior to that time, petroleum and natural gas revenues had increased only very slowly, and were never more than \$1 million, except in 1944. As a percentage of total revenue on income account, revenue from Crown petroleum and natural gas reached a maximum of

⁸See Table 3, Appendix 1.

⁹That is, fiscal year ending March 31, 1948.

four per cent in 1944. It was, however, less than two per cent for each year until 1936, and was typically between two and three per cent over the remainder of the pre-Leduc period. Indeed, in 1946, this proportion was slightly less than two per cent, the lowest in over a decade.

The introduction of sales of Crown reserves in late 1948 heralded the beginning of a rapid increase in the importance of revenues to the Province from the disposition of petroleum and natural gas rights. Total Provincial revenues from petroleum and natural gas increased from \$1.5 million in 1947 to \$44 million in 1950.

Sales of Crown reserves accounted for \$9 million, \$23 million, and \$29 million of revenues in 1948, 1949, and 1950, respectively. In 1951, however, this source of income provided only \$13 million, but rose to \$24 million in 1952. In 1953 proceeds from Crown reserve sales more than doubled to \$53 million; the next year they dropped to \$40 million, then nearly doubled to \$76 million in 1955. From 1956 to 1958 the value of these sales declined from \$69 million to \$54 million, only to jump to a peak of \$81 million in 1959. In both 1960 and 1961, sales of Crown reserves yielded \$44 million.

Government revenue from petroleum and natural gas rentals and fees increased from less than \$1 million in 1947 to nearly \$10 million in 1950, and continued to rise during the early years of the decade to a 1953 value of \$25 million. It declined by \$4 million the next year, but then rose in each of the following three years to \$31 million in 1957.

Since then revenue from rentals and fees has remained at approximately the same level, fluctuating between \$30 million and \$33 million, the peak being reached in 1959. The 1961 receipts to the Province from this source were slightly more than \$32 million.

Crown royalties increased consistently, rising from under \$1 million in 1947 to \$37 million in 1956. They fell by \$4 million the following year and by a further \$7 million in 1958 to \$25 million, reflecting decreases in crude oil production during those years: the decline was especially marked in 1958. Crown royalties then increased gradually to a 1960 level of \$28 million, and rose by \$11 million in 1961 to \$39 million.

Fluctuations in total Provincial revenue from petroleum and natural gas lands of course reflect the movement of all three components. Although variations in the proceeds from sales of Crown reserves are tempered somewhat by the relative stability of income from rentals and royalties, it is evident from table six that significant fluctuations in the total do occur. For example, in 1953 total petroleum and natural gas revenue increased from \$57 million to \$96 million but fell in the following year to \$81 million and rose to \$126 million in 1955. A moderate increase in 1956 of \$6 million was followed by a decline to \$109 million in 1958. There was another marked rise in 1959 to a peak of \$141 million, followed by a drop to \$103 million in 1960. In 1961 total revenue from petroleum and natural gas lands was \$116 million.

Proceeds from sales of Crown reserves have consistently provided appreciably more than one-third of the total revenue to the Province from the disposition of its petroleum and natural gas rights.¹⁰ In 1948, these sales accounted for slightly under one-half of total petroleum and natural gas land revenues, but this proportion increased to seventy per cent in 1949, and reached a peak of seventy-three per cent in 1950. There was a considerable drop to thirty-eight per cent in 1951, and Crown reserve sales maintained approximately that level of significance for the following two years. In 1954, however, this category again rose in importance to comprise sixty per cent of the total. This was followed by a rather steady decline over four years to a 1958 value of forty-eight per cent. There was another recovery of the significance of sales of Crown reserves to fifty-five per cent in 1959, but in each of the following two years income from this source decreased relative to the total by slightly over seven per cent. In 1961, Crown reserve sales accounted for forty per cent of all Provincial revenues from petroleum and natural gas lands.

It has been noted that income from rentals and royalties has been relatively more stable in absolute terms than that from sales of Crown reserves. Fluctuations in the relative importance of the former components of Crown revenue may partially be attributed to variations

¹⁰See Table 5, Appendix 1.

in the significance of the latter. The relative contribution of rentals and of royalties to total petroleum and natural gas revenues moved in approximately similar ways between 1947 and 1954. There was a marked decline in the significance of both components from 1947 to 1949, reflecting the rapid expansion of Crown reserve sales. This was followed by an increase in importance in 1951 of rentals from seventeen per cent to thirty-seven per cent and of royalties from ten per cent to twenty-five per cent. These levels were approximately maintained until 1954, when there was a relative decrease of rentals to twenty-two per cent and of royalties to eighteen per cent of the total.

The relative importance of rentals fell slightly in 1955 and remained at nineteen per cent in 1956; it rose during the next two years to twenty-nine per cent in 1958 and has stayed roughly at that level since that year. This proportion was twenty-eight per cent in both 1960 and 1961.

The comparative significance of royalties increased from 1954 to 1956, when it reached twenty-seven per cent of the total. This percentage was maintained in 1957, but there was a decline in the following two years to twenty-one per cent in 1959. In 1960, royalties comprised almost one-quarter of petroleum and natural gas revenues, and in 1961 there was an appreciable increase to thirty-two per cent.

In 1947 revenue from disposition of Crown petroleum and natural gas rights accounted for less than three per cent of total Provincial revenues on income account.¹¹ In 1948 this proportion rose to nearly eighteen per cent, and in the following year the Province derived one-third of its revenues from this source. From 1950 to 1952, petroleum and natural gas revenue remained relatively stable in relation to the total, in the middle-thirty per cent range. In 1953, however, this percentage increased considerably to forty-nine per cent. It declined by seven per cent the following year, but in 1955 it reached a peak of fifty-two per cent. In 1956 income from petroleum and natural gas lands again accounted for over one-half of the total. In each of 1957 and 1958, however, this proportion declined by approximately five per cent, to forty per cent. After a slight increase in 1959, there was a decrease of nine per cent in 1960 so that only one-third of Provincial revenue was obtained from petroleum and natural gas lands. In 1961, thirty-four per cent of total revenue was derived from that source.

Components of Crown Reserves

The Province of Alberta realized over \$600 million from sales of Crown reserves in the 1948-61 period.¹² Sales of petroleum

¹¹See Table 6, p.58 .

¹²See Table 4, Appendix 1.

and natural gas leases accounted for over seventy per cent of this total; they yielded \$432 million, compared to \$87 million from sales of petroleum and natural gas reservations, \$77 million from sales of drilling reservations, and \$11 million and \$2 million from sales of natural gas licences and natural gas leases respectively.

Revenues from sales of petroleum and natural gas leases increased rapidly from \$3 million in 1948 to \$36 million in 1950, but fell sharply to \$14 million in 1951. For the following three years proceeds from such sales fluctuated between \$18 million and \$24 million, but in 1955 they rose to \$40 million, and in 1956 reached the peak of \$67 million. In 1957, however, income from lease sales dropped back to the 1955 level, and in 1958 it declined further to \$27 million. In 1959 there was a marked increase to \$50 million, but in 1960 there was a \$10 million decline which was almost matched in 1961. Sales of leases in 1961 yielded \$31 million to the Treasury.

Sales of petroleum and natural gas reservations in Crown reserves did not provide significant amounts of revenue until 1953, when \$4 million was realized from them. Since then, income from this source has fluctuated widely. In 1954, proceeds from such sales rose to a peak of \$33 million, which is more than double the revenue from them in any other year. In 1955, these sales realized \$14 million, but in 1956 they decreased to \$1 million, only to rise to \$16 million in 1957.¹³ In each

¹³A portion of the Pembina field lies within the Cynthia pro-

of the following three years they declined by approximately \$5 million to a 1960 value of somewhat over \$1 million. In 1961, revenue from sales of petroleum and natural gas reservations in Crown reserves was less than half a million dollars.

Drilling reservation sales have provided the Province with substantial amounts of revenue in each year since their introduction in 1954, but they too have been subject to considerable fluctuation. In 1954 drilling reservation sales yielded \$7 million. They increased slightly in value the following year, but fell to \$4 million in 1956. In both 1957 and 1958, \$12 million was realized from these sales, and in 1959 a peak of \$14 million was attained. A decrease of \$5 million in 1960 was partially offset by a modest rise in 1961 to approximately \$11 million.

Sales of natural gas licences have not contributed appreciably more than \$1 million to Provincial revenues in any year except 1960, when they realized \$4 million; the 1961 value of these sales was \$1 million. Nor have sales of natural gas leases proven to be a significant component of revenues from sales of Crown reserves. In 1958 they amounted to \$600,000, but declined sharply over the following two years to \$56,000 in 1960. In 1961, however, such sales yielded \$900,000 to the Province.

vincial reserve, and part of the Swan Hills field, which was discovered in 1957, is within the Virginia Hills provincial reserve.

Crown Acreage Held by the Petroleum and Natural Gas Industry

Provincial petroleum and natural gas rights held by the industry have varied considerably between years.¹⁴ While the acreage held under lease generally increased from 1947 to 1959, and then leveled off, the acreage under petroleum and natural gas reservations has varied greatly. This is not surprising in view of the shorter term, large unit area and exploratory purpose of reservations.

Under one million acres were held under petroleum and natural gas lease in 1947. This area was, however, more than doubled the next year, and rose to six million acres in 1950. In the early 1950's the acreage held under lease rose by almost five million acres per year to nineteen million acres in 1953. There was a slight decrease in 1954, but in 1956 four years of steady expansion in lease holdings began, and in 1959 a peak of twenty-nine million acres was reached. A very minor decline followed, and in 1961 twenty-eight million acres were held under lease.

Over eleven million acres were held under reservation in 1947. Such holdings increased rapidly to thirty-seven million acres in 1949, and then rose again in 1951 to forty-eight million acres. There followed sharp declines in the acreage held in this way of seven million acres in 1952 and seventeen million acres in 1953 to twenty-four million

¹⁴See Table 6, Appendix 1.

Figures are as at December 31.

acres, but a strong recovery in the next three years brought the area to fifty-five million acres in 1956, which is the peak to date. Since 1956, there has been a general downward trend in the acreage held under reservation, to twenty-nine million acres in 1961.

Lands held under natural gas licences have never amounted to two million acres, although they approached this acreage in 1952 and 1953. Between 1954 and 1958, the industry held slightly over half a million acres in this form, and from 1959 to 1961, somewhat over one million acres were held each year as natural gas licences. The acreage under natural gas lease has expanded slowly but fairly steadily from under 200,000 acres in 1953 to one and one-half million acres in 1957 and to slightly under three million acres in 1961.

Total Crown acreage held by the industry has reflected any sharp changes in reservation acreage, but moderate declines here have generally been offset by the strength of lease holdings. The strong upward movement of both reservations and leases resulted in fifty-nine million acres of Crown rights being held by the industry in 1951. This figure dropped to forty-five million acres in 1953, reflecting the marked decrease in reservation holdings in that year. A slight increase in 1954 was overshadowed by an increase of nine million acres in 1955 which was more than doubled in 1956, when seventy-six million acres of Crown rights were held by the industry. In 1957, the peak was reached at very slightly above the 1956 level, and since that year there has been a fairly

persistent decline in Crown rights held. A 1958 level of sixty-nine million acres was slightly increased in 1959 but this was followed by a sharp drop to sixty-three million acres in 1960, and a small further decrease to sixty-one million acres in 1961.

CHAPTER V

THE EFFECT OF ALBERTA'S PETROLEUM AND NATURAL GAS LAND POLICY ON THE DEVELOPMENT OF THE INDUSTRY

The petroleum and natural gas industry in Alberta is characterized by a few large companies and several smaller firms.¹ On the one hand, the "major" company, because of the volume and diversity of its operations and its typically more mature financial structure, may more easily diversify risk and does not so rigidly require as immediate a return on its investments.² It is therefore more disposed toward large-scale exploratory activity, which is "...above all others, the sector of the industry in which the need to take long views is inescapable."³ Further, its ability to rely on capital generated

¹ John Davis, Canadian Energy Prospects (Royal Commission on Canada's Economic Prospects. Ottawa, 1957), p.143.

The smaller companies are often termed "independents". They typically engage primarily in the production of oil and gas. The larger concerns are referred to as "majors"; their operations are vertically integrated from exploration to production and usually to refining and marketing, and they are subsidiaries of foreign (generally U.S.) parent companies.

² Charles Hay, "The Role of the Independent in the Canadian Oil Industry," Oil in Canada (June 8, 1961), pp. 24-26.

³ "The Compulsion to Invest," Petroleum Press Service, XXXVIII, No. 9 (September, 1961), p. 322-23.

within the parent company's group makes it more able to withstand cyclical fluctuations within the industry.⁴ On the other hand, the "independent" has no large resources of working capital and must rely to a greater extent upon short-term bank credit.⁵ It therefore requires more immediate returns on its investments, and is more sensitive to short-term fluctuations in market conditions and, indeed, to the availability of funds.

The independents "...have played a vital role in the growth of the Canadian oil industry, especially in the wildcat drilling phase..."⁶ of earlier years, as distinct from the large-scale systematic exploratory methods now more generally employed, and have been responsible for almost one-half of the wildcats drilled and for an equal proportion of the pools discovered.⁷ However, "Programs of the size to fit the pattern of administration, finance and operation of the majors are essential to the progress and stability of the industry".⁸ It therefore may be asserted that the two forms of company complement each other.

It has been noted that Crown reserves are established from

⁴Canada, Royal Commission on Energy: Second Report (Ottawa, 1959), p.5-28.

⁵Ibid.

⁶Ibid.

⁷Hay, Oil in Canada (June 8, 1961), p.25.

⁸Ibid., p.24.

portions of petroleum and natural gas reservations not selected as leases by the holders of the reservations. These reserves are subsequently offered by the Department of Mines and Minerals on a cash bonus or tender basis at periodic sales. It is therefore possible to obtain parcels of semi-proven petroleum and natural gas rights without undertaking either the expenses or the risks of primary exploration. This facilitates the participation of the independents in the industry.

The concession system of land disposition, whereby large tracts are leased at the outset to companies on a profit-sharing basis, is typically followed in Venezuela and the Middle and Far East.⁹ The burden of exploration falls entirely on the ultimate producer. Small companies generally are not active in these areas, presumably because of the greater capital requirements and the greater lapse between investment and initial returns.

Because Crown reserves expected to be of greater potential producibility will be more highly valued by the members of the industry, firms with limited capital will tend to be successful tenderers only for parcels in less productive areas.¹⁰ This is borne out by evidence that the majors own most of the "shut-in" capacity, or potential production which cannot presently be realized, in Alberta: in 1957 the six largest majors together held about forty per cent of the gross acreage under

⁹Royal Commission on Energy: Second Report, p. 3-38.

¹⁰Davis, p. 145.

reservation and lease in western Canada, but controlled approximately three-quarters of the proven oil reserves.¹¹ Leases held by majors and considered to be of lesser value have been "farmed out", or leased for an interest, to independents.¹² It is to be expected that such arrangements would most frequently be made in periods when the industry's long-term expectations are less optimistic.¹³

The creation of Crown reserves from reservations implies a priori that the reward for assuming the risks of exploration is lowered relative to what it would be if entire reservations could be taken under lease in the first instance. The significance of this factor in inhibiting exploration is, however, difficult to assess. The petroleum industry has

...a peculiar willingness to be pushed...into heavy exploration

¹¹Ibid, p.143.

¹²Hay, Oil in Canada (June 8, 1961), p.25.

¹³William R. Pabst, Jr., "Unstable Conditions of Competition and Monopoly in Exhaustible Resource Industries," Journal of Political Economy, L, No.5 (October, 1942) pp. 739-49.

It was found that in the anthracite industry during a period of long-run decline in production, the sales of the larger companies and the established independents were declining rapidly, while the newer independents were gaining in absolute sales. "The strategic factor in the situation clearly appeared to be the great changes in the investment value of the unmined coal reserves, whose changing value reflected the expected situation of future demands for coal." (p.740) The downturn in demand induced a change in the policy of the established firms from increasing reserves to getting rid of as much of their reserves as they profitably could. New companies appeared, working mines which were leased from the older concerns at relatively cheap rates.

and drilling programmes even when it does not wish, collectively, to acquire more reserves....As far as one can see each firm's chief motive is to maintain its share of the entire industry's reserves, even if these are not needed. One suspects that there is some cultural lag here; the companies' producing departments are so accustomed to racing their rivals that they cannot endure sitting still and making the best of their existing reserves. Still less can they endure the idea that they might some day buy their crude oil more cheaply on an open market.¹⁴

The holder of a reservation may apply to have the rights underlying the corridors which separate his lease blocks¹⁵ advertised as drilling reservations, after Crown reserves have been established from the tract. Similarly, the original explorer of the area is entitled to bid on leases from these Crown reserves. Whether these factors materially mitigate the disincentive to exploration arising from being able to obtain only partial control of any large pools discovered is open to question, however; as all data gained during exploration has to be submitted to the Province, which makes it public, the initial explorer may not enjoy any significant advantage over his competitors at such sales.

Part of the "peculiar willingness" of the industry to undertake exploratory and developmental programmes beyond its current needs stems from the fact that the present Crown land policy allows the operation in one pool of two or more firms and that petroleum and natural gas

¹⁴Anthony Scott, "Policy for Crude Oil", Canadian Journal of Economics and Political Science, XXVII, No. 2 (May, 1961), p. 271-72.

¹⁵It will be remembered that the holder of a reservation may acquire under lease from his reservation blocks as large as nine square miles; blocks may corner, but otherwise must be separated by at least one mile, and not more than one-half of each township may be so selected.

are resources capable in most cases of flowing underground to an appreciable extent. "Each owner must drill and get the oil quickly, for otherwise his neighbors will get it all... [whereas] a slower exploitation would be more economic."¹⁶ Excess productive capacity is likely to result.¹⁷ A chain reaction is set up; if one concern drills a productive well, the firm holding the adjoining spacing unit must drill or face the possibility of having the petroleum underlying his lease drained into the neighbouring lease. This tendency is avoided where one company owns an entire pool: prorationing to market demand is virtually nonexistent in areas in which land is held on a concession basis.¹⁸

The rapid increase in petroleum production after the discoveries of 1947 and 1948 soon saturated the market, and it became evident that some system of establishing market allowables was necessary¹⁹ to assure a measure of stability and orderly development in the industry.²⁰

¹⁶Harold Hotelling, "The Economics of Exhaustible Resources," Journal of Political Economy, XXXIX, No. 2 (April, 1931), p.144.

¹⁷That excess capacity has in fact existed in Alberta may be seen from column 7 of Table 10, Appendix I.

¹⁸Royal Commission on Energy: Second Report, p.3-38.

¹⁹D.P. Goodall, "An Historical Sketch of Oil and Gas Conservation in Alberta" (Calgary: mimeographed, 1957), p.16.

Natural gas production has not materially exceeded market requirements; production allowables are set in conformity with maximum ultimate recovery from the pool.

²⁰Robert E. Hardwicke "Market Demand as a Factor in the Conservation of Oil," First Annual Institute on Oil and Gas Law and

The Oil and Gas Conservation Board, which until 1957 was termed the Petroleum and Natural Gas Conservation Board, had been established in 1938. In 1950 it made a study of the methods used in the United States to prorate production to market requirements and, with the advice of the industry, introduced a method of regulating production of crude oil which has undergone only minor revision since that time.²¹

Two concepts are recognised in determining production allowables. Firstly, the production of each producible well should be sufficient to meet operating cost and to yield a return on development costs.²² This is provided for through well "economic allowables", which are basically dependent upon well depth. Secondly, it is recognised that there exist variations in potential producibility between pools; "maximum permissible rates" of production, or M.P.R.'s, are therefore established for each well with a view to maximizing the ultimate recovery of oil from the pool. They are determined with reference to

Taxation (Southwestern Legal Foundation. New York: Matthew Bender and Co. Inc., 1949), pp.149-82.

²¹Goodall, p.16.

It is not the intention to provide a detailed review of the method of allocation of production allowables. Further discussion of the concepts and the development of the system may be found in E.J. Hanson, Dynamic Decade (Toronto: McClelland and Stewart Ltd., 1958), pp. 200-09, and Goodall, pp.1-18. The more recent modifications in the method may be found in letters of the Oil and Gas Conservation Board "To All Operators" dated August 30, 1957; November 19, 1957; February 25, 1959; December 9, 1959; and June 5, 1961.

²²Hanson, p.204.

the characteristics of the underlying strata in each case.

Having determined both the economic allowables and the M.P.R.'s, the Conservation Board allocates the market demand for petroleum among the producible wells on a monthly basis.²³ All purchasers of Alberta crude oil are requested to submit their requirements for the coming month; the sum of these "nominations" represents the provincial allowable for the month. This demand is then categorized into light, medium and heavy crudes, in accord with the expressed requirements of the buyers. The product of the number of wells eligible for economic allowances in a pool and the individual well allowances determines for each of the pools a "minimum allowable", which is subtracted from the demand for the appropriate category of the provincial allowable to determine the "residual demand" for each of the categories. These residuals are then allocated to the pools within each category according to their respective M.P.R.'s. The final pool allowable, which is the sum of its economic allowable and its share of the residual demand, is then divided among the wells in the pool.

On one hand, it may be claimed that this system encourages the development of new reserves by guaranteeing a share of the market to each producer. However,

²³Petroleum and Natural Gas Conservation Board, "The Petroleum and Natural Gas Conservation Board Plan for Proration to Market Demand" (Calgary: mimeographed, 1954), pp.2-3.

Because the total market requirement has to be allocated among all producing wells and every well is given a minimum production allowance, marginal wells and newly-drilled wells in effect are able to produce only because the share of the market assigned to all other wells, including those of the most efficient and low-cost producers, is simultaneously reduced. Under these arrangements even those producers who own a great deal of "shut-in" production, if they are to maintain their share of the market, must also drill and develop new wells on all lands under lease. This inevitably leads to excess producing capacity.²⁴

Furthermore, development drilling on the periphery of existing pools presumably implies a higher probability of obtaining a producible well than does primary exploration, although the latter may offer significantly higher potential rates of production when the well is successful. If it is the case that the difference in actual production between the two types of well, as determined by the Oil and Gas Conservation Board, does not correspond sufficiently closely to the difference in potential production, the industry may not feel justified in assuming the greater risks inherent in primary exploration. The search for new fields would therefore be inhibited.

Economic allowables have accounted for at least half of actual production in every year since 1951.²⁵ Between 1956 and 1958, the proportion of petroleum production met from economic allowables increased from fifty-four per cent to eighty-three per cent; in 1960 a peak of ninety-two per cent was reached. The differential in actual

²⁴Royal Commission on Energy: Second Report, pp. 5-47, 5-48.

²⁵Table 10, Appendix I.

Figures are for light and medium crude oil.

production between a well with a high M.P.R. and well barely able to produce its economic allowable therefore tended to narrow over the second half of the decade, and over the same period there was a decline in the acreage held under reservation.²⁶

In brief, the system of disposition of Crown petroleum and natural gas rights followed by the Province of Alberta facilitates the participation of the independent company in the industry by making available on a cash bonus basis relatively small tracts of semi-proven land. The policy allows development of each pool by two or more concerns, which encourages development at a rate faster than that dictated by market requirements and may lead to excess productive capacity. The restrictions on the selection of leases from reservations inhibit primary exploration, but perhaps not to a significant extent. Finally, the emphasis on economic allowables in the determination of production allowables also retards primary exploration, but allows holders of less productive leases a greater share of total production.

²⁶Table 6, Appendix I.

CHAPTER VI

CONCLUSION

The present policy governing the disposition of Crown petroleum and natural gas rights has developed over the past sixty-five years. It was not until after 1947, however, that the petroleum and natural gas industry became a major factor in Alberta's economy. Interest in the Province's Crown land policy then heightened and important modifications were introduced in the late 1940's and early 1950's. The establishment of Crown reserves became general throughout the Province, and petroleum and natural gas reservations and leases were supplemented by new forms of tenure, including natural gas licences and leases and Crown reserve drilling reservations.

In 1962 another extensive revision of the policy occurred. Among the more important changes were the reduction in the term of petroleum and natural gas leases to ten years from twenty-one years, the enforcement of drilling requirements on leases granted prior to June 1962, the establishment of Block A in the south-east quarter of the Province and the introduction of petroleum and natural gas permits to supersede petroleum and natural gas reservations in that area.

The Province owns over eighty per cent of the mineral rights within its borders and is therefore able to influence materially both

the structure of the petroleum and natural gas industry and the pattern of development of these resources through its administration of Crown lands. The Government has attempted to encourage the participation of "independent" operators in the industry and has permitted development of petroleum and natural gas resources at a rapid pace.

The two aspects of the Province's administration of its petroleum and natural gas rights which have been discussed--the impact on provincial revenues and on the development of the industry--are not unrelated. The sums paid by the industry for Crown lands have been shown to represent an important proportion of its total expenditure while, at the same time, the amounts received by the Government from the disposition of these lands comprise a significant proportion of its total revenue.

The revenues to the Province from petroleum and natural gas lands are derived from three sources; royalties, rentals and sales of Crown reserves. Of these, the latter has over the past decade generally accounted for about one-half of the total.¹ However, these sales have been of declining relative importance since 1959, while royalties have significantly increased from twenty-one per cent to thirty-two per cent; rentals have risen only slightly. Although sales of Crown reserves are lucrative and immediate sources of revenue, they have proved to

¹See Table 5, Appendix 1.

be subject to large fluctuations from year to year. Royalties, on the other hand, have tended to be less volatile and are therefore presumably more predictable. The increase in Crown royalty in 1962 may possibly be explained in terms of the Province's desire to emphasize longer-term sources of income at the expense of present revenue.² The discontinuation of Crown reserves in Block A, apart from providing an inducement to further development of that portion of the Province, may be interpreted as an additional indication of this change in emphasis.

The primary concern of the Oil and Gas Law Revision Committee was the lack of exploration for new fields in Alberta. The Committee felt that an impetus to primary exploration could be provided by increasing the availability of undeveloped Crown rights through acceleration of the rate of turnover of undrilled acreage held by the industry. The modifications to Crown land policy which are incorporated in the Mines and Minerals Act, 1962 reflect the recommendations of the Committee, and may be expected to lead to the desired more rapid turnover. However, whether greater availability of land will in fact induce a significant increase in primary exploration, ceteris paribus, is open to question. It has been noted that the system presently employed to allocate the demand for crude oil among producers tends to inhibit such

²Increased royalties, by decreasing the net value to the producer of given production, presumably result in lower tenders for given parcels at Crown reserve sales.

exploration and that the restrictions on selection of leases from reservations may also aggravate the problem. Yet both points are fundamental to the policy of encouraging independent operators and it would therefore not seem likely that either will be materially changed.³

A number of further incentives to exploration suggest themselves for incorporation into the present Crown land policy. These were in fact advocated by the McGillivray Commission⁴ in 1940. One of the recommendations was that the Minister responsible for petroleum resources be empowered to "...reduce or even forego Royalty payments in respect of a specified number of acres adjacent to a well which is deemed to be and declared to be a discovery well as distinguished from a well drilled in proven territory".⁵ As the present Crown royalty on crude oil is at least eight per cent of monthly production from each well, adoption of this provision could be expected to induce some swing towards exploration.⁶ Such action would, however, presumably

³The provision that the holder of a petroleum and natural gas permit may acquire the entire area of the permit under lease is a departure from this policy, but the Committee considered that Block A had already been largely explored.

⁴Alberta's Oil Industry: The Report of a Royal Commission appointed by the Government of the Province of Alberta under The Public Inquiries Act to inquire into matters connected with Petroleum and Petroleum Products (Imperial Oil Limited, 1940).

⁵Ibid., p. 9.

⁶The Independent Petroleum Association has proposed that a similar scheme be made applicable to deeper exploratory wells to

result in a loss of royalty income to the Province, at least in the next few years, and would be counter to the recent increase in emphasis on royalties.

Another recommendation of the McGillivray Commission was the waiving of any drilling requirements on leases in proven territory on condition that the lessee do a corresponding amount of exploratory work.⁷ This incentive could be incorporated in the drilling requirements which are now enforced on leases issued prior to June 1962. The increase in the availability of land may not be so marked if lessees are permitted to retain undrilled acreage upon proof of exploratory activity elsewhere,⁸ but the pace of exploration may in fact be higher under such an arrangement.

The McGillivray Commission made a further suggestion to the effect that in addition to encouraging private exploration the Government

encourage more extensive testing of a given location.

Independent Petroleum Association of Canada, "Submission to Department of Mineral Resources of the Province of Saskatchewan Re: Incentives for Deeper Petroleum and Natural Gas Exploration" (Calgary: mimeographed, 1962), p.2.

⁷Alberta's Oil Industry, p.9.

⁸The provisions of the present Act for grouping leases to satisfy drilling requirements will tend to retard the rate of turnover of undrilled acreage. This hesitancy to further expedite the surrender of such lands may well be justified by concern over the possibility of resulting disruption of the industry and by an awareness of present excess productive capacity.

directly undertake exploratory activity.⁹ There may, however, be questions of the psychological effect on the industry of direct Government participation in the development of the Province's petroleum resources. These implications would have to be considered before such action were taken.

There is recognition of the dual responsibility of the Government and the industry in adapting policies to prevailing circumstances.

...the legislation in the provincial statutes pretty well reflects the basic policies and objectives of the government. On the other hand, the administrative practices that stem from regulations and orders of regulatory bodies, to a considerable extent, reflect the industry attitudes, good or bad (provided of course there is no conflict with the broad intent of any Act).¹⁰

The Government has shown an awareness of the problems confronting the petroleum and natural gas industry, and has attempted to alleviate these difficulties. However, it is not always a simple matter to reconcile the wishes of the industry and the best interests of the Province as a whole. It may for example be possible to establish an environment more conducive to the industry only at the expense of provincial revenues which would have to be obtained from alternative sources unless public

⁹Alberta's Oil Industry, p.11.

This view has been put forward in more recent literature. See for example Anthony Scott, "Policy for Crude Oil," Canadian Journal of Economics and Political Science, XXVII, No. 2 (May, 1961), p.276.

¹⁰W.D.C. Mackenzie, "Address to the Canadian Institute of Mining and Metallurgy" (Calgary: May 3, 1962), in Daily Oil Bulletin, May 4, 1962, p.3.

expenditure were reduced. The implications of these decisions for the welfare of the Province as a whole are beyond the scope of this study.

BIBLIOGRAPHY

PUBLIC DOCUMENTS AND GOVERNMENT PUBLICATIONS

- Alberta. Order in Council No. 122/51 (January 29, 1951).
- _____. Order in Council No. 1705/52 (December 1, 1952).
- _____. Order in Council No. 581/54 (April 23, 1954).
- _____. Order in Council No. 256/62 (February 21, 1962).
- _____. Order in Council No. 606/62 (April 30, 1962).
- _____. Order in Council No. 607/62 (April 30, 1962).
- _____. Order in Council No. 722/62 (May 17, 1962).
- _____. Order in Council No. 776/62 (May 24, 1962).
- _____. Order in Council No. 807/62 (May 31, 1962).
- _____. Public Accounts of the Province of Alberta. Annual, year ending March 31, 1931 to year ending March 31, 1962.
- _____. Report of Royal Commission on Petroleum and Petroleum Products, 1940. Published in Alberta's Oil Industry: The Report of a Royal Commission appointed by the Government of the Province of Alberta under the Public Inquiries Act to inquire into matters connected with Petroleum and Petroleum Products. Imperial Oil Ltd., 1940.
- _____. Report of Oil and Gas Law Revision Committee, 1962.
(Mimeographed.)
- _____. Statutes of Alberta, 21 Geo. V (1931).

_____. Statutes of Alberta, 11 Geo. VI (1947).

_____. Statutes of Alberta, 13 Geo. VI (1949).

_____. Statutes of Alberta, 11 Elizabeth II (1962).

Alberta Department of Lands and Mines. Report of the Department of Lands and Mines, 1938-39.

Alberta Department of Mines and Minerals. Alberta Oil and Gas Picture 1947-1961.

_____. Submission to Royal Commission on Energy. 1958.
(Mimeographed.)

Canada. Orders in Council of the Department of the Interior, No. 9, 1887 and No. 20, 1898. Ottawa: Public Lands Section, Resources Division, Department of Northern Affairs and National Resources.

_____. Report of the Royal Commission on the Natural Resources of Alberta. 1935.

_____. Royal Commission on Energy: Second Report. 1959.

_____. Statutes of Canada, 31-32 Vict. (1869).

_____. Statutes of Canada, 35 Vict. (1872).

_____. Statutes of Canada, 42 Vict. (1879).

_____. Statutes of Canada, 44 Vict. (1881).

_____. Statutes of Canada, 57-58 Vict. (1894).

_____. Statutes of Canada, 20-21 Geo. V (1930).

Canada Department of Mines and Technical Surveys. Petroleum 1961. Ottawa, 1962.

Dominion Bureau of Statistics. The Crude Petroleum and Natural Gas Industry. Ottawa: annual 1949-60.

_____. Crude Petroleum and Natural Gas Products, Vol. XIII, No. 12 (December, 1961).

BOOKS

- Beach, F.K. and Irwin, J.L. The History of Alberta Oil. Edmonton: Alberta Publicity and Travel Bureau, 1940.
- Canadian Petroleum Association. 1961 Statistical Year Book. Calgary: Canadian Petroleum Association, 1962.
- Charters Statutes, Orders in Council &c. Relating to the Hudson's Bay Company. London: Hudson's Bay Co., 1931.
- Davis, John. Canadian Energy Prospects. Study prepared for the Royal Commission on Canada's Economic Prospects. Ottawa, 1957.
- Hanson, E.J. Dynamic Decade. Toronto: McClelland and Stewart, Ltd., 1958.
- Martin, Chester. "Dominion Lands" Policy. In Vol. II of Canadian Frontiers of Settlement. Edited by W.A. Mackintosh and W.L.G. Joerg. Toronto: Macmillan Co., 1938.
- _____. The Natural Resources Question. Winnipeg: King's Printer to the Province of Manitoba, 1920.
- Morton, Arthur S. History of Prairie Settlement. In Vol. II of Canadian Frontiers of Settlement. Edited by W.A. Mackintosh and W.L.G. Joerg. Toronto: Macmillan Co., 1938.

ARTICLES AND PERIODICALS

- "The Compulsion to Invest," Petroleum Press Service, XXVIII (September, 1961), 321-23.
- The Edmonton Journal. February 24, 1962.
- Emery, H.T. "Some Legal Aspects of Oil Development in Alberta," Canadian Bar Review, XXVIII (December, 1950), 1071-86.
- "Exploration, Development, Production," Oil in Canada (November 22, 1962), pp. 8-9.
- Hardwicke, Robert E. "Market Demand as a Factor in the Conservation of Oil," First Annual Institute on Oil and Gas Law and Taxation. Southwestern Legal Foundation. New York: Matthew Bender and Co., Inc., 1949, pp. 149-82.

- Hay, Charles. "The Role of the Independent in the Canadian Oil Industry," Oil in Canada (June 8, 1961), pp. 24-26.
- Hotelling, Harold. "The Economics of Exhaustible Resources," Journal of Political Economy, XXXIX (April, 1931), 137-75.
- Mackenzie, W.D.C. "Address to the Canadian Institute of Mining and Metallurgy," Daily Oil Bulletin. May 4, 1962.
- Manning, Hon. E.C. "Address to the Canadian Petroleum Association," Daily Oil Bulletin. March 21, 1962.
- Pabst, William R. Jr. "Unstable Conditions of Competition and Monopoly in Exhaustible Resource Industries," Journal of Political Economy, L (October, 1942), 739-49.
- Scott, Anthony. "Policy for Crude Oil," Canadian Journal of Economics and Political Science, XXVII (May, 1961), 267-76.
- Tanner, N.E. "The Oil and Gas Law of the Province of Alberta, Canada," First Annual Institute on Gas and Law and Taxation. Southwestern Legal Foundation. New York: Matthew Bender and Co., Inc., 1949, pp. 313-41.
- Wood, V.A. "Alberta's Public Land Policy, Past and Present," Journal of Farm Economics, XXXIII (November, 1951), 735-49.

UNPUBLISHED MATERIAL

- Alberta Department of Mines and Minerals. "The Disposition of Petroleum and Natural Gas Rights in Alberta." Edmonton, n.d. (Mimeographed.)
- _____. "Historical Review of Mineral Ownership." Edmonton, 1960. (Mimeographed.)
- Goodall, D.P. "An Historical Sketch of Oil and Gas Conservation in Alberta." Calgary: Petroleum and Natural Gas Conservation Board, 1957. (Mimeographed.)
- Independent Petroleum Association of Canada. "Submission to Department of Mineral Resources of the Province of Saskatchewan re: Incentives for Deeper Petroleum and Natural Gas Exploration." Calgary, 1962. (Mimeographed.)

Oil and Gas Conservation Board. "Alberta Proration Summary,"
Calgary, June 1, 1962. (Mimeographed.)

Petroleum and Natural Gas Conservation Board. "The Petroleum and
Natural Gas Conservation Board Plan for Proration to Market
Demand," Calgary (1954). (Mimeographed.)

Somerville, H.H. "Alberta's Crown Reserves," Speech to a Joint
Technical Meeting of the Canadian Institute of Mining and
Metallurgy, Petroleum and Natural Gas Division, and the
Geological Association of Canada. Calgary, 1954. (Mimeographed..)

APPENDIX I

TABLE 1. -- Petroleum and natural gas industry expenditure in Alberta on land acquisition and rentals, and on royalties, 1947-1961
(in million dollars)

Year	Land Acquisition and Rentals (1)	Royalties (2)	Total Expenditure (3)	Per cent (1) of (3) (4)	Per cent (2) of (3) (5)	Per cent (1+2) of (3) (6)
1947	7.5	1.5	28.5	26.3	5.3	31.6
1948	12.0	2.0	67.0	17.9	3.0	20.9
1949	32.0	5.0	129.0	24.8	3.9	28.7
1950	52.0	6.5	182.0	28.6	3.6	32.1
1951	32.5	11.5	214.0	15.2	5.4	20.6
1952	43.5	15.5	262.0	16.6	5.9	22.5
1953	47.0	20.0	279.0	16.8	7.2	24.0
1954	94.0	25.0	323.0	29.1	7.7	36.8
1955	93.0	31.0	389.0	23.9	8.0	31.9
1956	102.5	41.0	472.0	21.7	8.7	30.4
1957	104.5	40.0	426.0	24.5	9.4	33.9
1958	88.0	30.0	443.0	19.9	6.8	26.6
1959	109.0	33.5	454.5	24.0	7.4	31.4
1960	91.0	35.0	480.5	18.9	7.3	26.2
1961	87.5	55.0	544.5	16.1	10.1	26.2

Source: Canadian Petroleum Association, 1961 Statistical Yearbook (Calgary, 1962), p. 37; and, Oil in Canada, November 22, 1962, p. 9.

TABLE 2. -- Petroleum and natural gas industry expenditure in Alberta on land acquisition and rentals, and on royalties, and percentages thereof received by the Province,
1947 - 1961
(in million dollars)

Year	Land Acquisition and Rentals		Per cent (2) of (1)	Royalties		Per cent (5) of (4)	Per cent (2+5) of (1+4) (7)
	Total industry (1)	to Province (2)		Total industry (4)	to Province (5)		
1947	7.5	0.6	8	1.5	0.8	53	14
1948	12.0	5.2	43	2.0	1.4	70	46
1949	32.0	24.8	78	5.0	3.3	66	76
1950	52.0	44.8	86	6.5	4.9	75	85
1951	32.5	29.5	91	11.5	10.0	87	90
1952	43.5	40.3	93	15.5	12.9	83	90
1953	47.0	43.8	93	20.0	16.3	82	90
1954	94.0	89.3	95	25.0	19.7	79	92
1955	93.0	82.9	89	31.0	26.1	84	88
1956	102.5	97.6	95	41.0	35.4	86	93
1957	104.5	98.3	94	40.0	36.0	90	93
1958	88.0	81.1	92	30.0	24.3	81	89
1959	109.0	104.1	96	33.5	27.3	82	92
1960	91.0	86.0	95	35.0	27.5	79	90
1961	87.5	75.5	86	55.0	35.4	64	78

Sources: Department of Mines and Minerals of the Province of Alberta, Alberta Oil and Gas Picture 1947-1961; Canadian Petroleum Association, 1961 Statistical Yearbook (Calgary, 1962), p. 37; and Oil in Canada, November 22, 1962, p. 9.

TABLE 3. -- Revenue to the Province of Alberta from disposition of Crown petroleum and natural gas rights, and the proportion thereof to total revenue on income account 1931-62 (in thousand dollars)

Year ending March 31	P. & N. G. Rentals, Fees etc.	P. & N. G. Royalties	Sales of Crown Reserve Leases & Reservations	Total P.& N.G. Land Revenue	Total Revenue on Income Account	% P. & N. G. Revenue of Total
1931	87	111		198	15,711	1.3
1932	58	106		164	13,492	1.2
1933	42	73		115	15,426	0.7
1934	81	74		155	15,179	1.0
1935	104	61		165	15,698	1.1
1936	116	117		233	16,575	1.4
1937	348	108		456	20,743	2.2
1938	285	249		534	24,128	2.2
1939	372	394		766	24,270	3.2
1940	341	408		749	24,410	3.1
1941	230	412		642	24,922	2.6
1942	189	571		760	27,214	2.8
1943	268	576		844	27,961	3.0
1944	240	504		744	29,786	2.5
1945	599	669		1,268	31,848	4.0
1946	353	550		903	40,916	2.2
1947	273	536		809	42,588	1.9
1948	708	765		1,473	54,178	2.7
1949	2,151	1,619	8,721	12,491	70,446	17.7
1950 ⁽¹⁾	6,263	3,663	23,231	33,157	99,553	33.3
1951	9,787	5,239	29,081	44,107	118,186	37.3
1952	15,384	11,081	13,211	39,676	120,825	32.8
1953	19,688	13,536	23,527	56,751	154,744	36.7
1954	24,604	18,583	53,236	96,423	197,043	48.9
1955	20,657	20,229	40,013	80,899	191,185	42.3
1956	21,372	28,810	76,075	126,257	241,608	52.3
1957	25,822	37,306	69,051	132,179	261,669	50.5
1958	31,046	32,819	58,642	122,507	267,433	45.8
1959	29,836	25,451	53,610	108,897	275,549	39.5
1960	32,684	27,338	81,323	141,345	334,816	42.2
1961	30,902	27,758	44,128	102,788	307,855	33.4
1962	32,407	39,218	44,291	115,916	339,495	34.1

Source: Public Accounts of the Province of Alberta, 1931 to 1962.

(1) First year of reporting by the Department of Mines and Minerals. All categories subsequently include revenue from school lands. Such revenues are excluded prior to 1950, due to the absence of a breakdown of the total of revenues from all minerals on school lands and to the greater relative importance of the coal industry.

TABLE 4. -- Revenue to the Province of Alberta from disposition of Crown mineral rights, with components of "Sale of Crown Reserves" category, 1947-1961
(in thousand dollars)

Year	Sale of Crown Reserves						Total P.& N.G. Land Revenue
	P.&N.G. Leases	P.&N.G. Reservations	Drilling Reservations	N.G. Licences	N.G. Leases	Sub-total Rentals	Royalties
1947						564	766
1948	3,142					3,142	1,379
1949	19,166	597				19,763	3,276
1950	36,260	-				36,260	4,852
1951	13,680	1,398				15,079	10,001
1952	22,357	35				22,393	12,861
1953	17,597	3,699		1,239	232	22,767	16,342
1954	23,811	32,888	7,245	876	31	64,851	19,668
1955	40,259	13,545	8,259	303	9	62,375	26,104
1956	66,730	1,104	3,858	962	7	72,660	35,434
1957	40,366	15,622	11,503	714	15	68,220	36,038
1958	26,944	10,681	11,882	996	580	51,082	24,295
1959	50,203	5,778	14,241	1,304	303	71,828	27,331
1960	39,564	1,469	9,227	3,649	56	53,964	27,540
1961	31,421	479	10,660	1,165	907	44,631	35,432
Total	431,500	87,295	76,875	11,208	2,140	609,015	281,319
							1,185,061

Source: Department of Mines and Minerals of the Province of Alberta, Alberta Oil and Gas Picture 1947-1961 (Edmonton, 1962).

TABLE 5. -- Percentage of total Provincial revenue from disposition of petroleum and natural gas rights accounted for by each of sales of Crown reserves, rentals, and royalties, 1947-1961⁽¹⁾

<u>Year</u>	<u>Sale of Crown reserves as % of total revenue</u>	<u>Rentals as % of total revenue</u>	<u>Royalties as % of total revenue</u>
1947		42.4	57.6
1948	48.0	30.9	21.1
1949	70.4	17.9	11.7
1950	73.0	17.3	9.8
1951	38.2	36.5	25.3
1952	42.1	33.7	24.2
1953	37.8	35.0	27.2
1954	59.5	22.4	18.1
1955	57.2	18.8	24.0
1956	54.6	18.8	26.6
1957	50.8	22.4	26.8
1958	48.4	28.5	23.0
1959	54.7	24.5	20.8
1960	47.5	28.2	24.3
1961	40.2	27.8	31.9

(1) calculated from Table 4. The sum of the components does not necessarily equal 100.0 due to rounding.

TABLE 6. -- Crown petroleum and natural gas rights held by private concerns, 1947-1961, at December 31
(in thousand acres)

<u>Year</u>	<u>P. & N.G. Reservations</u>	<u>P. & N.G. Leases</u>	<u>Nat. Gas Licences</u>	<u>Nat. Gas Leases</u>	<u>Total</u>
1947	11,473	908			12,381
1948	23,473	2,556			26,029
1949	37,000	3,396			40,396
1950	37,123	5,769			42,892
1951	48,261	9,113	1,596		58,970
1952	41,286	14,902	1,861		58,049
1953	23,515	19,150	1,861	164	44,690
1954	27,261	17,525	694	854	46,334
1955	35,900	17,558	798	1,053	55,309
1956	54,636	19,213	646	1,308	75,803
1957	51,549	22,214	544	1,540	75,847
1958	41,856	24,670	557	1,707	68,790
1959	38,196	28,874	1,241	1,952	70,263
1960	31,298	28,615	1,250	2,251	63,414
1961	29,104	28,231	1,165	2,843	61,343

Source: Department of Mines and Minerals of the Province of Alberta,
Alberta Oil and Gas Picture 1947-1961 (Edmonton, 1962).

TABLE 7. -- Canadian production of crude petroleum with selected provinces 1946-1961
(in thousand barrels)

Year	Production of Crude Petroleum				Per cent Alberta of total
	Alberta	Saskatchewan	Manitoba	Canada ⁽¹⁾	
1946	7,138	119		7,586	94.1
1947	6,770	540		7,692	88.0
1948	10,889	849		12,287	88.6
1949	20,087	782		21,305	94.3
1950	27,548	1,041		29,044	94.8
1951	45,915	1,249	11	47,616	96.4
1952	58,916	1,697	105	61,237	96.2
1953	76,816	2,798	654	80,899	95.0
1954	87,714	5,423	2,148	96,080	91.3
1955	113,035	11,317	4,146	129,440	87.3
1956	143,910	21,077	5,787	171,981	83.7
1957	137,492	36,861	6,090	181,848	75.6
1958	113,278	44,626	5,829	165,496	68.4
1959	129,967	47,442	5,056	184,778	70.3
1960	130,507	51,908	4,764	189,534	68.9
1961	157,812	55,859	4,480	220,861	71.5

Sources: Dominion Bureau of Statistics, The Crude Petroleum and Natural Gas Industry (Ottawa: annual to 1960); and, Crude Petroleum and Natural Gas Production, Vol. XIII, No. 12 (December, 1961).

(1) Includes production in Ontario, British Columbia, Northwest Territories, and New Brunswick, the 1961 amounts of which (in thousand barrels) were 1,148, 1,018, 533, and 12, respectively.

TABLE 8. -- Canadian production of natural gas, with selected provinces
1946-1961
(in million cubic feet)

Year	Production of Natural Gas ⁽¹⁾					Per cent Alberta of total
	Alberta	Sask.	B. C.	Ontario	Canada ⁽²⁾	
1946	40,097	210		7,051	47,900	83.7
1947	44,107	274		7,786	52,657	83.8
1948	48,965	477		8,590	58,603	83.6
1949	51,180	813		8,024	60,457	84.7
1950	58,604	814		8,009	67,822	86.4
1951	69,877	860		8,443	79,461	87.9
1952	79,150	1,007		8,302	88,686	89.2
1953	89,652	1,422		9,709	100,986	88.8
1954	107,174	3,333		10,016	120,735	88.8
1955	133,007	6,707		10,853	150,772	88.2
1956	146,134	9,808	188	12,812	169,153	86.4
1957	183,141	13,994	8,275	14,401	220,007	83.2
1958	239,050	18,820	63,638	16,148	337,804	70.8
1959	297,569	33,613	69,129	16,839	417,335	71.3
1960	383,683	36,572	85,592	16,987	522,972	73.4
1961	503,606	36,677	103,014	14,456	657,892	76.5

Sources: Dominion Bureau of Statistics, The Crude Petroleum and Natural Gas Industry (Ottawa: annual to 1960); and, Crude Petroleum and Natural Gas Production, Vol. XIII, No. 12 (December, 1961).

(1) Excludes field wastage and gas reproduced from underground storage and injection operations. The figures thus show natural gas sold for domestic, industrial and other uses, and gas used in the field by well operators.

(2) Includes production in New Brunswick and Northwest Territories, which in 1961 amounted to 96 MMCF and 42 MMCF.

TABLE 9. -- Canadian crude petroleum supply, 1946-1961
(in thousand barrels)

<u>Year</u>	<u>Canadian Production</u>	<u>Imports</u>	<u>Exports</u>	<u>Apparent Supply</u>
1946	7,586	63,407		70,993
1947	7,692	69,077		76,769
1948	12,287	77,634		89,920
1949	21,305	75,681		96,986
1950	29,044	80,124		109,168
1951	47,616	84,237	342	131,511
1952	61,237	82,751	1,424	142,564
1953	80,899	81,627	2,507	160,019
1954	96,080	78,884	2,345	172,619
1955	129,440	86,792	14,834	201,399
1956	171,981	106,641	42,908	235,715
1957	181,848	111,905	55,674	238,079
1958	165,496	104,039	31,679	237,856
1959	184,778	115,289	33,362	266,705
1960	189,534	125,560	42,235	272,859
1961	220,861	133,226	67,143	286,944

Sources: Dominion Bureau of Statistics, The Crude Petroleum and Natural Gas Industry (Ottawa, annual to 1960); and, Canada Department of Mines and Technical Surveys, Petroleum 1961 (Ottawa, 1962).

TABLE 10. -- Prorationing of medium and light crudes in Alberta,
1951-1961
(in thousand barrels per day unless otherwise noted)

Year	Allowable Oil Wells ⁽¹⁾ (1)	Mean well			Actual Production (4)	Potential Production ⁽²⁾ (5)	Per cent	
		Economic Allowance (2)	$2 \div 1$ (bbls./day) (3)	allowance (3)			(2) of (4)	(4) of (5)
1951	2,090	72	34.4		122	198	59.0	61.6
1952	2,779	95	34.2		157	257	60.5	61.1
1953	3,587	122	34.0		206	310	59.2	66.5
1954	4,257	145	34.1		236	336	61.4	70.2
1955	4,968	163	32.8		304	485	53.6	62.7
1956	6,133	207	33.8		387	674	53.5	57.4
1957	7,011	240	34.2		369	745	65.0	49.5
1958	7,706	252	32.7		303	780	83.2	38.8
1959	8,633	284	32.9		348	806	81.6	43.2
1960	9,506	323	34.0		353	858	91.5	41.1
1961	10,351	362	35.0		430	928	84.2	46.3

Source: Alberta Petroleum and Natural Gas Conservation Board, "Alberta Proration
Summary" (Calgary: mimeographed, June 1, 1962).

(1) Number of wells eligible for economic allowances.

(2) Effective maximum permissible rate.

APPENDIX II



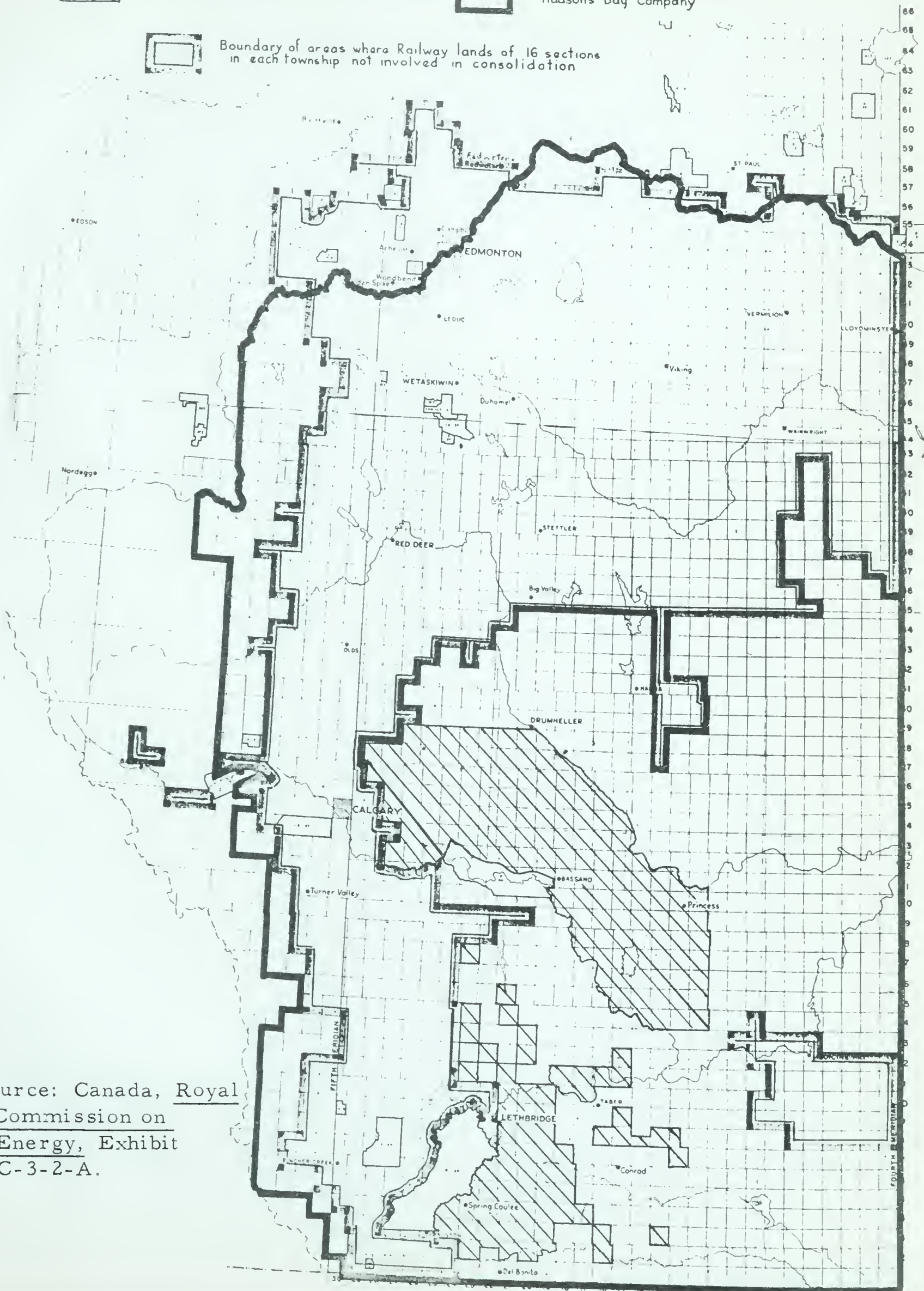
Areas where Railway lands consolidated



Boundary of general area where $\frac{1}{10}$ of lands granted to Hudson's Bay Company



Boundary of areas where Railway lands of 16 sections in each township not involved in consolidation



Source: Canada, Royal Commission on Energy, Exhibit C-3-2-A.

University of Alberta Library



0 1620 1066 9438

B29805